ORANGE COUNTY SANITATION DISTRICT

Injury and Illness Prevention Program (2022)

OCSAN
ORANGE COUNTY SANITATION DISTRICT

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I. Commitment to Safety and Health

The Orange County Sanitation District's (OCSD) number one priority is the health and safety of our employees and we are also committed to preventing accidental loss of resources and physical assets. To ensure employee safety, we have instituted safe practices that include but are not limited to reporting protocols for near misses and incidents, policies, safety meetings, and training for all employees with the continuing objective of reducing risk of injury. Through safety awareness and commitment of all employees at every level of our organization with consistent and continuing efforts, injuries can be prevented. There will be no compromise of an individual's well-being in anything we do.

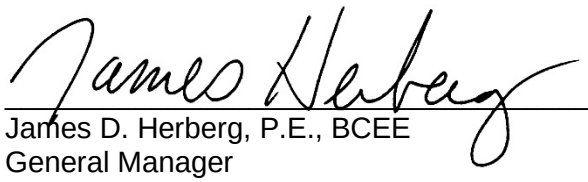
It is my direction to all executive management and leadership staff to model safe practices and enforce the safety rules and guidance, and to monitor and implement actions to help ensure an injury and illness free work environment. Each director, manager, and supervisor shall make the safety and health of employees an integral part of his or her regular management function. Management involvement is required and crucial in driving a proactive safety culture, where each employee feels free to speak up about unsafe conditions and acts, or any other safety related issues. Cooperation in all safety and health matters is required, not only between supervisor and employee, but between employee and his or her coworkers. Only through such a cooperative effort can the best interest of all be established and preserved.

To help ensure that our commitment to safety and health is translated into appropriate actions, we recognize the importance of employee participation. It is equally the duty of each employee to accept and follow established safety regulations and procedures. Each employee is responsible for following general safety rules and work practices at all times. It is the duty of each employee to report, as soon as possible, any hazardous condition, unsafe act, injury, or illness related to the workplace.

Our objective is to conduct our business in the safest possible manner consistent with the Occupational Health and Safety Act, applicable regulations, and industry best practices. Working in a safe and healthy manner requires knowledge, skill and thoughtful execution of the task at hand. We are committed to providing opportunities for all employees to build their competence through training and educational opportunities relevant to their duties.

We will maintain a safety and health management system conforming to the best practices of organizations of this type. We are committed to continual improvement and will conduct regular reviews of the safety and health management system to ensure it continues to meet the organization's needs and regulatory requirements.

I trust that all of you will join me in a personal commitment to make safety a way of life.



James D. Herberg, P.E., BCEE
General Manager

June 25, 2020
Date

II. Introduction

The Injury and Illness Prevention Program (IIPP) has been developed as part of the overall safety and health program to provide Orange County Sanitation District (OC San) employees, contractors, and visitors with a safe and healthful working environment.

California Occupational Safety and Health Administration (Cal OSHA) Title 8, California Code of Regulations (CCR), Section 3203 requires every California employer to provide and maintain an effective IIPP. Since January 27, 2002, OC San has adopted an IIPP which describes specific requirements for program responsibility, compliance, communication, hazard assessment and correction, incident investigations, training, recordkeeping, and employee acknowledgement and engagement. Safety and health programs required by Cal OSHA standards are provided as Appendices to the IIPP.

The Risk Management Division provides companywide leadership and oversight in the implementation of the IIPP. Risk Management is responsible for development, implementation, and continuous improvement to OC San's comprehensive risk-based safety and health program. OC San's Management Team is responsible for providing the necessary resources, equipment, support, training, and oversight to implement the IIPP. All OC San employees are responsible for adhering to the requirements of the IIPP, reporting hazards, near misses, and incidents to supervision, and use safety equipment, personal protective equipment, and other devices and procedures provided or directed by OC San.

The required elements listed below are the elements of the IIPP as required by Cal OSHA. Specific details of each element may be found in specific referenced safety programs, procedures, or General Safety Rules, where applicable.

III. Roles and Responsibilities

Safety is the responsibility of everyone. Management is responsible for providing resources and safe work environments. Supervisors of work activities are responsible for ensuring employees have the right tools, equipment and are qualified to perform their work. Employees are accountable for using safe work practices and notifying management of unsafe conditions or acts so corrections can be made. OC San expects each employee to work each day without incident or injury, and to return home safely. Each OC San employee is responsible for safety and health excellence. Specific responsibilities are outlined in this section, as well as throughout the attached safety procedures and programs.

A. Risk Management

The Program Administrator responsible for this IIPP implementation is the Director of Human Resources, Celia Chandler. The Director of Human Resources assumes full management responsibility for injury and illness prevention, including development, review, and implementation of OC San's safety program and goals. Injury and illness prevention are managed through the Risk Management Division.

The Human Resources and Risk Manager, Laura Maravilla, assumes management responsibility for the Risk Management Division. This position coordinates and manages district-wide safety and health programs, emergency response, disaster preparedness, and security to prevent injury and illness among the workforces.

The Safety and Health Supervisor, John Frattali, assumes supervisory responsibility over the Risk Management Division. This position develops, plans, and oversees district-wide safety and

health programs, emergency response, disaster preparedness, and security to prevent injury and illness among the workforces.

The Risk Management Division identifies potential risk to the organization and provides solutions for mitigation or reduction of the risk to acceptable levels. The Risk Management Division responsibilities include:

- Advising management on safety and health issues.
- Maintaining the written IIPP Program.
- Preparing, maintaining, and distributing OC San safety procedures and programs.
- Serving as liaison with governmental agencies.
- Planning, coordinating, and delivering safety training.
- Monitoring the implementation of the program and develop means of accountability for the enforcement of the program.
- Assisting management in the investigation of incidents and document findings
- Maintaining current information on local, state, and federal safety and health regulations.
- Arranging for safety and health inspections and follow up to ensure necessary corrective actions are completed.
- Maintaining injury and illness records.
- Establishing and maintaining a system for maintaining the records of inspection, hazards abatement, incident reports and training.
- Conducting industrial hygiene assessments to include evaluation and sampling.
- Performing site audits and report findings to management.
- Managing and oversight of hazardous materials and hazardous waste.

B. Management

Executive Management, Managers and Supervisors shall ensure that individuals under their management have the authority and funding to implement appropriate safety and health programs and procedures. Management responsibilities include:

- Ensuring that workplaces and equipment are safe, well maintained, and in compliance with external agency regulations.
- Ensuring employees are provided with the proper tools and personal protective equipment.
- Ensuring employees follow safe work practices, safety programs, and safety procedures.
- Ensuring employees are appropriately disciplined for infractions of safety rules, procedures, and programs.
- Ensuring periodic inspections of work areas are completed and documented in accordance with the Periodic Workplace Inspections program.
- Ensuring that unsafe operations are stopped, and that unsafe tools and equipment are removed from service.
- Ensuring identified hazards are reported, documented, and corrected.

- Recognizing employees who perform work practices which promote safety and health in the workplace.
- Ensuring their employees complete all safety training for which they are profiled.
- Ensuring sufficient resources are provided to maintain a safe and healthful workplace, including competent staff, budget, and time.

C. Employees

- Comply with safe work practices, programs, and procedures.
- Participate in training programs.
- Participate in workplace hazard recognition, and promptly report to management all findings, near misses, and incidents.
- Shall not operate any equipment or perform work for which they have not been trained.
- Conduct daily inspections of their work area to check for unsafe conditions, including, personal protective equipment, equipment, tools, and vehicles.
- Participate in enforcement inspections and periodic inspections.
- Exercise stop work authority when unsafe conditions or acts exist in their work area. The unsafe conditions shall be corrected as soon as possible.

IV. Compliance

Management shall ensure that employees comply with safe work procedures and programs and have adequate safety equipment available for its employees. Managers and Supervisors shall ensure safety and health programs and procedures are clearly communicated, understood by employees, and enforced fairly and uniformly. All employees are responsible for complying with safety procedures, programs, and safe work practices.

OC San will ensure workers comply with rules and maintain a safe work environment through:

- Informing workers of the provisions of the IIPP.
- Recognizing employees for following safe work procedures.
- Providing training to employees and refresher training as required.
- Evaluating the safety performance of employees through periodic inspections.
- Disciplining employees for failure to comply with programs, procedures, and safe work practices.

OC San does not retaliate against employees for reporting safety and health concerns. Employees are not to be discharged or discriminated against in any manner for bona fide reporting of safety and health hazards to OC San or governmental agencies (e.g., Cal OSHA).

V. Communication

OC San utilizes several methods to communicate safety and health requirements, warnings, best practices, and incident investigation findings to facilitate a continuous flow of safety and health information between management and employees. Communications include but are not limited to:

- New employee orientation, including review of the IIPP and General Safety Rules, will be provided within 30 - 60 days of hire date.
- Workplace safety and health training programs.
- Division and Department safety meetings.
- Signs, Labels and Tags
    - Signs, labels, and tags are posted throughout the workplace to notify employees of hazards present.
    - Notice signs and tags are used to deliver information about machines, buildings, areas, or equipment. These signs outline procedures, maintenance information, operating instructions, rules, and directions unrelated to personal injuries. These signs and tags are blue with white background.
    - General safety signs are provided to offer broad safety-related messages, typically provided for medical equipment, sanitation, first aid, housekeeping, emergency eyewash and shower stations, and other general safety measures. These signs are green with white background.
    - Danger, caution and warning signs and tags are used to alert, and example dangers and consequences associated with entering a restricted area. Danger signs are black and red on a white background. Caution signs are black on yellow background. Warning signs are black on orange background.
    - Fire safety signage identifies emergency firefighting equipment and fire exits.
- Safety Awareness for Everyone (SAFE) Bulletins
    - SAFE Bulletins are issued by the Risk Management Division to convey changes in safety programs or procedure. The program or procedure change can be provisional or permanent.
    - SAFE Bulletin principles shall be adopted and followed until the corresponding procedure or program is updated.
    - SAFE Bulletins are distributed via electronic copy to Management/Supervision for dissemination to employees. Management/Supervision shall discuss the changes with their team, explain why the change is needed, and provide direction on what needs to happen. SAFE Bulletins are also posted in common areas.
    - SAFE Bulletins are maintained electronically on the Risk Management SharePoint site.
- SafetyGrams
    - SafetyGrams are issued by the Risk Management Division to convey lessons learned from near misses and incidents, or to communicate safe work procedures, practices or other information deemed important. The intent is to provide timely, reliable, and accurate notification of safety-related incidents that could result in personal injury, illness or property and equipment damage.
    - SafetyGrams are distributed to Management/Supervision for dissemination to employees. Management/Supervision shall review the SafetyGram with their team.
    - SafetyGrams are maintained electronically on the Risk Management SharePoint site. Management/Supervision are encouraged to periodically review SafetyGrams at random with their team during staff meetings.
    - Safe work procedures and programs will be updated where necessary to address the lessons learned.

- Safety and Health Committee
    - The labor-management safety and health committee meets monthly, prepares written records of meetings, reviews inspection and audit results, reviews investigations of incidents, makes suggestions for prevention of future incidents, and provides recommendations regarding employee safety suggestions.
    - Subject-specific safety subcommittees may be formed at any time with the concurrence of the Labor-Management Safety and Health Committee to address specific safety concerns.
- Safety Programs and Procedures (Hazard Control Programs)
    - Risk Management will develop, implement, and maintain safety programs and standard operating procedures (SOPs) to ensure compliance with local, State and Federal laws.
    - The safety programs and procedures are provided in Attachment B. These documents are electronically saved on the Risk Management intranet site under the Safety Policies button. These programs are always available for review by all employees.
    - Employees must comply with safety programs and procedures. Failure to do so will result in disciplinary action.
    - Safety programs and procedures will be reviewed and updated annually at a minimum. Near misses, vehicle accidents, injury or illness may require timely revisions. These documents will be approved by the appropriate stakeholders with final approval and adoption by the General Manager (or designee).
- Employees are able and encouraged to consult with Risk Management at any given time.

VI. Hazard Identification and Analysis

Unsafe work conditions shall be corrected in a timely manner based on the severity of the hazards. Hazards will be identified and assessed per the following schedule:

- When employees are introduced to tasks which a hazard evaluation has not been previously performed.
- Prior to beginning the shift by supervisor and workers.
- When new substances, processes, procedures, or equipment presenting potentially new hazards are introduced.
- When new, previously unidentified hazards are recognized.
- When near misses, injuries or illnesses occur.
- When conditions warrant an inspection.

OC San has established a written Hazard Assessment and Risk Control Program (SOP-645), which further identifies how hazards will be identified, evaluated, assessed, and controlled. OC San employs the following effective hazard identification tools to identify existing and potential hazards in the workplace.

- Pre-Use Analysis
    - Proposed changes in operations or process, procedure, chemicals, and equipment are to undergo a pre-use analysis to determine the impact on safety.
        - Change in process, procedure and equipment are to be reviewed by subject matter experts, Risk Management, Management and/or third-party vendors.

        - Change in chemicals or introduction of new chemicals are to be reviewed and approved by Risk Management, Environmental Compliance, and subject matter experts (if necessary).
    - Analysis will be performed during procurement and/or design phase to maximize hazard controls.
    - The level of detail of the analysis will be proportionate with the perceived risk and number of employees affected.
- Routine Self-Inspections
    - The inspections are periodically completed for identification and correction of existing or potential hazards in the workplace.
    - The inspections are scheduled, documented, and completed by trained and/or experienced employees. These employees can identify actual and potential hazards and understand safe work practices.
    - OC San maintains a Periodic Workplace Inspection Program (SOP-101) that describes the frequency of inspection and areas covered, roles and responsibilities for conducting the inspections, recording of findings, responsibility for abatement, and tracking of identified hazards.
- Annual Evaluations
    - OC San's safety and health management system will be evaluated at least annually. The scope of the evaluation will be determined by Risk Management with feedback from Management. The evaluation will identify strengths and weaknesses of the safety and health program, including specific recommendations for making improvements.
    - The IIPP, general safety rules, safety programs and procedures will be reviewed and updated at least annually. It will be determined as part of any near miss and incident investigation if these documents require updates because of the incident root cause.
- Hazard Reporting System
    - OC San's uses Cority (a safety and health management system) for incident and injury reporting. Cority enables employees to notify appropriate supervisory and Risk Management staff in writing, without fear of reprisal, about conditions that appear hazardous. Timely and appropriate responses are provided to the employee, allowing for tracking of hazard elimination or control to completion.
    - Employees are also able to anonymously report hazards through drop-boxes that are positioned in key administrative support buildings.
    - The following mechanisms are also used to report known and potential safety and health hazards:
        - Verbal or written (email) reporting to supervision.
        - Verbal or written (email) reporting to Risk Management staff.
        - Submitting a Maximo (enterprise asset management system) service request.
        - Reporting to the labor-management Safety and Health Committee.
        - Reporting to the employee's bargaining unit representative.
- Industrial Hygiene
    - OC San has established a written Industrial Hygiene Program (SOP-642), which establishes the procedures and methods for identification, analysis, and control of

those hazards. The program includes a qualitative assessment and quantitative sampling plan.

- Qualitative industrial hygiene assessments have been completed to document safety and health hazards with potential exposure. The qualitative assessment will be updated as new processes or equipment are introduced, for regulatory changes, controls have been implemented, there is a change in the process or chemical.
- OC San will conduct quantitative assessments for hazardous substances being used or generated by the work process, when employees complain of illness, after exposures or near misses, as required by regulation, when change occur in process, or as otherwise determined by the Risk Management Safety and Health Supervisor.
- Results of sampling will be communicated to employees monitored, including similar exposure groups. Results will dictate required controls, following the hierarchy of controls.

- Job Safety Analysis (JSAs)
  - The JSA is a method of looking at job and then breaking it down into smaller tasks. Each task is then analyzed for risk and a plan is developed to minimize the risk. A good worker already does this mentally; however, this is to be put to paper.
  - The JSA must be completed and reviewed with all affected parties prior to the commencement of work.
  - JSAs are required for high-hazard work, including but not limited to crane lifts, excavation work greater than 5 feet in depth, confined space entry, respirator work, working around hazardous chemicals, electrical energized work, welding and cutting operations around combustible materials, elevated work, and any non-routine tasks.
  - JSAs will also be created for tasks that have had injuries associated with them.

VII. Hazard Prevention and Control

Incidents are prevented through the timely recognition and correction of hazards. Unsafe work conditions and practices will be corrected in a timely manner based on the potential of the hazard to cause injury. Hazards that are more serious will be given higher priority to correct. When hazards cannot be immediately controlled or eliminated, then the action necessary for correction should be documented with a date established for completion. Hazards are to be reported as a Safety Observation using Cority. Interim controls may also be necessary to protect personnel until a permanent solution can be implemented. Hazards shall be corrected when observed or discovered.

When an imminent hazard exists that cannot be immediately abated without endangering employee(s) and/or property, exposed employees shall be removed from the area except those necessary to make the correction. Workers necessary to correct the hazardous condition will be provided with necessary safeguards.

The Hierarchy of Controls shall always be considered when assessing the effectiveness of hazard controls. The higher the hierarchy, the more effective the control usually is. These controls will always be implemented using a layered approach. Elimination of the hazard is always the preferred control. When this is not possible, a lower control shall be implemented. Personal protective equipment (PPE) shall always be the last line of defense and used when other control options are not feasible.

- Elimination: physically remove the hazard.

- Substitution: replace the hazard for a lower-risk hazard (e.g., use less toxic chemical).
- Engineering Controls: isolate people from the hazard (e.g., build an enclosure around a noisy machine, guardrails, machine guarding).
- Administrative Controls: change the way people work (e.g., training, signage, or job rotation).
- Work Practices: includes rules and practices (housekeeping, washing hands, etc.).
- Personal Protective Equipment (PPE): provide PPE to reduce exposure (e.g., hearing protection, hard hat, respirator).

OC San also implements a computer maintenance management system (CMMS) to ensure critical equipment does not fail and that safety related equipment is properly maintained. The CMMS system tracks the scheduled maintenance of these items.

VIII. Emergency Action Planning

OC San has developed an Emergency Response Program (SOP-112) and an Integrated Emergency Response Plan (IERP) designed to safeguard employees, facilities, the public and the environment in the event of a disaster (natural or manmade) and other emergencies. Emergency situations could develop from a major explosion or fire, earthquake or Tsunami, uncontrolled hazardous material release, verified bomb threat, or civil disorder, active shooter, or other threat which interrupts OC San's ability to provide safe and environmentally responsible wastewater treatment.

The IERP contains policies, plans and procedures for preparing for and responding to emergencies. Personnel are trained on IERP and its implementation. OC San's emergency response organization, called the Incident Command System (ICS), will be activated when an emergency condition cannot be effectively responded to using the normal operating organization.

Efficient emergency response begins notification of response personnel. Normal emergencies allow for some warning and notification. Wastewater only emergencies may be obvious, such as a hazardous materials incident, or a warning from the remote monitoring systems, field crews, or customers. Notice of external emergencies will usually be received by the Control Center or Operations Center. In situations like a major earthquake, the emergency is immediate, and personnel should respond immediately without waiting for notification.

Emergency notification can be made by dialing 2222 from any OC San landline, which will connect the caller to either Plant 1 Control Center or the Plant 2 Operations Center depending upon the location the person called from. If notification needs to be made while employees are offsite or from a cell phone, they can dial either Plant 1 emergency line at (714) 593-7133 and Plant 2 emergency line at (714) 593-7677 to report emergencies. Refer to the Medical Program (SOP-111) and Bloodborne Pathogens (SOP-113) for more information.

IX. Incident Investigations and Reporting

Near misses, vehicle accidents, injuries and illness must be reported to Management as soon as possible. Incident investigations will be conducted by trained individuals, with the primary focus of understanding why the incident occurred and what actions can be taken to prevent recurrence. Investigations shall be conducted in accordance with the Incident Investigation and Reporting Program (SOP-202). Incidents will be documented using OC San's electronic incident management system. Incident investigations will include:

- Visiting the incident scene as soon as possible,
- Interviewing injured or involved workers and witnesses,
- Examining the workplace for factors associated with the incident/exposure,
- Determining the cause of the incident,
- Taking corrective action to prevent the incident from reoccurring, and
- Recording the findings and corrective actions taken.

The purpose of the investigation is not to put blame on any individual or group. OC San will communicate findings and corrective actions to employees using the communication tools listed in Section V. For more prevalent or serious incidents, a safety stand-down meeting may be required, where normal work activities are paused, and the entire work group focuses on the safety issue. Safety stand-downs will be led by Risk Management and members of the Management team. Refer to Incident Reporting and Investigation Program (SOP-202) for more information.

X. Safety and Health Committee

OC San has established a safety and health committee, composed of management and non-management employees. The purpose of the Safety and Health Committee is to provide a formal means for employees to effectively participate with management in safety and health problem identification and resolution. The Committee will also participate in investigations of near misses and other safety incidents when they occur. The Safety and Health Committee meets at least monthly. Refer to the Safety and Health Committee Program (SOP-100) for more information.

XI. Training and Instruction

All employees will be trained and provided instruction on general and job-specific safety and health practices. Training will be provided as follows:

- To all new workers,
- To all workers given new job assignments for which training has not previously been provided,
- Whenever new substances, process, procedures, or equipment are introduced to the workplace and represent a new hazard,
- Whenever new or previously unrecognized hazards are discovered,
- To supervisors to familiarize them with safety and health hazards to which workers under their immediate direction and control may be exposed, and
- To all workers with respect to hazards specific to each employee’s job assignment.

New employees shall receive a New Employee Safety Orientation to familiarize them with the hazards of a wastewater treatment plant and OC San safety programs and procedures. Safety training is typically based on job classification, hazards that will be anticipated in a job and the employee's actual job duties. The following workplace safety and health practices will be provided to employees during new employee orientations:

- Review the IIPP, emergency action plan and fire prevention plan, and measures for reporting unsafe conditions, unsafe acts, and injuries.

- Use of appropriate personal protective equipment. Refer to the Personal Protective Equipment Program (SOP-102) for additional details.
- Information about chemical hazards to which employees could be exposed and other hazardous communication information.
- Availability of toilet, handwashing, and drinking water facilities.
- Provisions for medical services and first aid, including emergency procedures.

Safety training profiles has been developed for each job classification. The training listed on the profile is mandatory. Training assignments consider job description and duties, results of industrial hygiene assessments, personal protective equipment job inventories, regulatory requirements, and best industry practices. Employees will be assigned computer-based training (CBT), classroom training, on-the-job training, or a combination thereof. CBT is selected from a training catalogue, provided by the current training content provider. Classroom training is provided by qualified Risk Management staff or qualified third-party training providers. On-the-job training is provided by the specific Division in which the employee works.

Employees shall receive safety training before they are required to perform a task and at the frequency specified in the trailing profile or specific safety programs and procedures. Employees may be required to complete training courses annually, biannually, or triennially depending on the training course and regulatory requirement. Some trainings might be offered one time. Employees whose training has expired shall not perform any work where safety training is required to perform associated task until their training is made current.

XII. Incentives and Recognition

OC San seeks to recognize, acknowledge, and reward employees for their improving safe work practices, resolving unsafe conditions, and achieving excellence in safety performance.

Management and/or Risk Management can award an employee with points in OC San's safety recognition platform (Awardco), which may be redeemed for incentive items available through the program. Points should be rewarded for genuine, meaningful, and important contributions that move the safety program forward. Points may be awarded for, but not limited to the following:

- Safe Work: participation in a safety meeting, supervision-recognized safe act, etc.
- Proactive Safety: promptly reporting a near miss, timely reporting and mitigating unsafe conditions, conducting a safety audit, maintaining good housekeeping, submitting service requests to make safety repairs, etc.
- Safety Leadership: leading a safety meeting, participating in a root cause investigation, recognizing a peer for a safe act; volunteering and presenting a safety moment, etc.
- Safety Engagement: on the spot safe act, above and beyond safe behavior, working outside assigned duties to ensure safety of others, etc.

XIII. Disciplinary Action

Employees are responsible for performing work in a safe manner and are required to follow all OC San policies and operating procedures. Employees shall report violations of safety rules in

accordance with established OC San procedures. Employees will not be subject to disciplinary action for reporting an injury or illness in good faith. Employees will receive fair and consistent disciplinary action in accordance with established Human Resources policies and Memoranda of Understanding (MOUs) for violations of policy, programs, and procedures that could have, or did result in serious injury or fatality. Management is responsible for ensuring all safety programs and procedures are enforced and followed by their employees.

XIV. Contractor Safety

All Contractors and Subcontractors conducting business with the OC San shall establish, maintain, and implement their own IIPP that is compliant with California regulations. Contractors and Subcontractors shall comply with the OC San Construction Safety Standards, including the requirement for a Site-Specific Safety Plan. OC San Project Managers, Resident Engineers, Construction Inspectors, and Risk Management are responsible for enforcing the requirements of the OC San Construction Safety Standards and Cal OSHA regulations.

XV. Document Control

Adequate safety programs and procedures are in place and understood at the appropriate organizational levels. Availability and distribution of key safety documents is adequately controlled using the Risk Management intranet site.

All documents generated as part of the IIPP are controlled documents, which include the safety and health programs and safe work procedures provided in Appendix B. These documents are to be reviewed at least annually and updated as needed. Revisions logs are provided in each program and procedure to describe changes made, if any.

XVI. Recordkeeping

Health and safety records are maintained in accordance with Cal OSHA requirements. If there is no Cal OHSA recordkeeping requirement for a document, then OC San recordkeeping requirements are employed where needed.

Adequate recordkeeping enables OC San to learn from past experiences and make corrections to future operations. OC San will maintain records of near misses, work-related injuries and illnesses, vehicle accidents and property losses. These incidents will be reviewed, causes identified, and controls implemented to prevent serious injuries or illnesses from recurring.

Records not mentioned below will be managed in accordance with specific safety programs and procedures.

- Injury and Illness Records
    - Each work-related fatality, injury and illness will be recorded on the Cal OSHA Log of Occupational Work-Related Injuries and Illnesses, Form 300.
    - Each work-related fatality, injury and illness will have the incident recorded in Cority, OC San's incident management system. Cority has been designed to comply with Cal OSHA Injury and Incident Report, Form 301.
    - Each near miss and vehicle accident will have the incident recorded in Cority.
    - OC San shall annually review and certify the Cal OSHA Form 300 and post the Summary of Work-Related Injuries and Illnesses, Form 300A. The form will be certified and posted by February 1 for the prior year. The form will remain posted where employees can see it until April 30.

  - OC San shall maintain the last seven years of injury and illness records.
  - OC San shall regularly review the injury and illness records to find patterns or repeat situations that require immediate corrective action.
- Exposure Monitoring and Medical Records
  - Exposure monitoring and medical records shall be retained in accordance with the OC San Medical Program, with establishes the requirements for employee access to medical records.
  - Industrial Hygiene qualitative and quantitative assessment results will be maintained and available for employee review in accordance with the OC San Industrial Hygiene Program.
- Regulated Carcinogens
  - OC San will report to Cal OSHA's Occupational Carcinogen Control Unit within 15 days of initial use, any use of regulated carcinogens. Any changes in use will also be reported within 15 days of such change.
  - The report will contain the name of the employer, address, identifying description of where the regulated carcinogen is used, and a brief description of the operating or process which creates employee exposure to the carcinogen and number of employees engaged in each process or operation.
- Inspection Records
  - Records of safety inspections shall be kept twelve months after the last item found deficient has been corrected. Copies of safety inspections are maintained in Cority or Maximo.
  - Records to identify unsafe conditions and work practices. Documentation shall include name of person(s) conducting the inspection, hazards and unsafe work practices that are recognized and their associated corrective actions.
  - Records of hazard assessment inspections, including person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form.
- Training Records
  - Employee safety training records are maintained in an electronic database, Cornerstone. These records are retained for seven years. Training database will be maintained for the life of the organization.
  - Employees who work at OC San for less than one year will be provided copies of their training records upon termination of employment, if requested.
  - Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, type(s) of raining, and training providers.

All records created or generated in the course of this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records.

XVII. References

Title 8, California Code of Regulations (CCR), §3203. Injury and Illness Prevention Program

Title 8, CCR, §3204. Access to Employee Exposure and Medical Records

Title 8, CCR, §3340. Accident Prevention Signs

Title 8, CCR, Title 8 Industrial Relations

XVIII. Appendices

A. General Safety Rules
B. Safety Programs and Procedures

Appendix A

GENERAL SAFETY RULES

ORANGE COUNTY SANITATION DISTRICT

GENERAL SAFETY RULES

The Orange County Sanitation District (Sanitation District) has established a set of generic safety rules that apply to employees, contractors, and visitors. Violators of these rules can be subject to disciplinary action, contract termination, or removal from the site.

1. All persons shall follow these general safety rules, policies and programs, as well as applicable state and local safety orders.
2. Any employee has the right to stop work if they feel the work is unsafe.
3. Report all near misses, incidents, injuries, and illnesses immediately.
4. Wear the required personal protective equipment (PPE) necessary for the job.
5. Do not perform a task unless you have been trained, and you are aware of the hazards as well as how to mitigate or eliminate them.
6. Always use the proper tool for the job. Never modify tools or equipment without manufacturer approval. Use all tools and equipment with manufacturer intended guards and devices.
7. Always know the emergency action plan for your work area. Know what the warning devices are and where to go.
8. Obey all posted warning signs and barricades.
9. Maintain good housekeeping of vehicles, carts, and workstations. Maintain work area in a neat, orderly manner. Throw trash and refuse into proper waste containers.
10. Inspect equipment, tools, ladders, lifts, PPE, etc. before using. If found to be defective remove from service.
11. Jobsite radios, music devices, and headphones are prohibited when working in a plant process area.
12. Communication headsets are permitted when working in noisy environments (i.e., CenGen, Gas Compressor Building) and during high hazard operations (i.e., crane lifts, vacuum truck operations) for communicating with adjacent team members. Communication headsets must be approved by Risk Management.
13. Always use correct manual lifting technique (size up the load, maintain straight back, bend at knees, lift with legs, keep load centered and close to chest).
14. Operate vehicles in safe manner.
15. Do not text, read emails, or eat while driving. In accordance with state law, vehicle phone usage must be performed using hands-free devices.
16. Abide by posted speed limits and obey all traffic and parking signs.

17. Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.
18. Maintain a clean and easy route to emergency exits and equipment.
19. Do not block access to emergency eyewash and showers, electrical panels, and fire extinguishers.
20. Be cautious as to what others are doing around you and do your best to ensure you do not pose a hazard to them (and vice versa).
21. Smoking is only permitted in designated smoking areas.
22. Stairways shall remain clear. Areas under stairways should not be used to store combustibles.
23. Wipe up spills promptly. Report all releases and spills to supervision.
24. Never stack unstable materials on top of file cabinets or other high places.
25. Cabinets, shelfing and of equipment shall be secured to prevent tipping.
26. When carrying objects do not obstruct your vision.
27. Use GFCI in all wet locations. Test prior to each use.
28. Do not use open flames or spark producing equipment without authorized hot work permit.
29. Ladders are to be properly secured during use or held by coworker.
30. Fall protection is required when working outside the rungs of a ladder or when working at an elevated location where a fall could occur to a lower level.
31. The unauthorized removal of machine guards or disconnecting of signaling devices is prohibited.
32. Employees shall not enter manholes, underground vaults, tanks, silos, clarifiers or other similar confined spaces without approval from Risk Management.
33. Employees should wash hands with soap and water prior to eating, drinking, smoking, applying cosmetics or after using the restroom.
34. Loose or frayed clothing, or long hair, dangling ties, finger rings, etc. shall not be worn around moving machinery or other sources of entanglement.
35. Always read labels and instructions alerting you to potential dangers and hazards.
36. Do not stand or climb on furniture, or otherwise prop or position your feet/shoes on furniture.
37. Do not eat, drink, smoke or apply cosmetics within the wastewater treatment plant or collections facilities, except where permitted such as lunchrooms, administrative work areas, controls rooms, in carts and vehicles, and designated break areas.

Appendix B

SAFETY PROGRAMS AND PROCEDURE

ORANGE COUNTY SANITATION DISTRICT	SOP-100 (Ver. 4) Safety and Health Committee
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

A. The Orange County Sanitation District (OC San) is committed to preventing workplace injuries and illness among employees, visitors, contractors, and service vendors. OC San values employee input and encourages active participation in ensuring their safety and the safety of others. To prevent injuries and illness, a joint employee-management committee (Safety and Health Committee) has been established. Employee involvement in accident prevention and support of the Safety and Health Committee is necessary to ensure a safety and healthful workplace.

B. The purpose of our Safety and Health Committee is to involve employees and management in a non-adversarial, cooperative effort to promote safety and health in the workplace. The Safety and Health Committee permits employees to effectively participate with management in identification, evaluation, and resolution of safety and health issues.

II. Background

A. The Safety and Health Committee is an internal committee, where OC San employees and management can discuss safety issues and concerns. The Safety and Health Committee members will work with all OC San employees to improve the safety at OC San to include the reduction in hazards, identification of corrective action, and the improvement of the safety standards.

B. OC San fulfills the requirement of the Injury and Illness Prevention Program (IIPP) for a system of communicating with employees on matters relating to occupational safety and health via the Safety and Health Committee, as well as utilizing other safety communication tools and programs.

III. Organization

A. At a minimum, the Safety and Health Committee will be composed of twelve (12) members, six (6) employee representatives (non-management) and six (6) management representatives. The non-management employees shall be volunteers or elected by their peers. If no employees volunteer or are elected, they may be appointed by management. The Management representatives shall be volunteers or elected by the Executive Management Team (EMT). Appointed members for both non-management and management representatives should be appointed based on qualifications such as experience, training, and interest in serving.

B. Chairing will occur between both parties. Non-management representatives will select one (1) employee representative to serve as co-chairperson. Management representatives will also select one (1) management representative to serve as co-chairperson. The co-chairpersons shall serve at the same time with the same level of responsibility. The co-chairpersons will be selected independent of one another.

C. The non-management representatives shall be selected from the following groups:

- Two (2) International Union of Operating Engineers (IUOE) Local 501 Representative
- Two (2) Orange County Employees Association (OCEA) Representative
- Two (2) Professional Group Representative

D. The management representatives shall be selected from the following groups:

- One (1) Executive Management Team (EMT) Member
- Two (2) Managers
- Three (3) Supervisors

E. The non-management and management representatives may delegate attendance with the committee meeting to employees within their same group. The purpose of delegation is so both employees and management can always be equally represented at the Safety and Health Committee meetings when regular members are not able to attend for legitimate reasons (sick time, vacation, conflicting meeting, etc.). Alternates are not permanent members of the committee and do not have voting rights.

F. Safety and Health Committee members shall commit to serving a three-year term. Member terms begin on January 1st of each year. If three consecutive committee meetings are missed, membership will be evaluated by the Chairpersons and Risk Management. Employees may be replaced as needed.

G. Chairpersons shall commit to serving a one-year term. The co-chairperson term begins on January 1st of each year.

H. At least two safety and health representatives from the Risk Management Division will attend the Safety and Health Committee meetings. Risk Management will provide technical assistance and updates on OC San's safety and health management system. The Risk Management Division will also record minutes of the meetings.

IV. Extent of Authority

The Safety and Health Committee advises management about safety and health issues in the workplace. All written recommendations from the Safety and Health Committee will be submitted to management. General recommendations on policy issues, safety concerns, and routine business will be submitted to Risk Management for follow up in the normal course of business. The committee is also extended the option of submitting critical concerns and/or recommendations directly to the EMT with the expectation of a response within five working days.

V. Responsibilities

A. Committee Chairpersons

- Lead the committee meeting; ensure meetings says on topic and starts/ends on time.
- Alternate chairing the Safety and Health Committee meeting.
- Meet at least two weeks prior to monthly committee meetings with Risk Management to develop the meeting agenda.
- Review previous minutes and materials for meetings.
- Identify the need for specialized safety and health training committee members, based on level, participation, purpose, position, and area/division.
- Establish sub-Committees as needed for special projects, topics, or events.
- Help or elect a committee member for special safety events when needed.
- Perform presentations regarding Committee status and performance on an as needed basis.
- Create, edit, and obtain approval through Committee quorum the Annual Safety and Health Committee Report. This is due to the General Manager each year by March 31st.
- Ensure effective communication of Committee activities to employees and management.

B. Committee Members (includes Chairpersons)

- Report unsafe conditions and practices.
- Attend committee meetings or assign alternate during absence.
- Review safety and health policies and procedures developed by Risk Management following Risk Management's policy schedule.
- Review incidents involving work-related fatalities, injuries, illness or near misses.
- Assist Risk Management with review of employee complaints, near misses, and injuries.
- Participate in worksite inspections as needed.
- Designate representatives to accompany representatives from regulatory agencies (i.e., OSHA) during inspections of the workplace.
- Contribute ideas and suggestions for improvement of safety.

C. Risk Management Division

- Arrange for meeting place and time of meeting.
- Email the meeting agenda to committee members at least one week in advance of the committee meeting.
- Distribute minutes to committee members within one week after the committee meeting.

- Post minutes for other employees.
- Arrange and update the Safety and Health Committee program.
- Assume chairperson's duties, if required.
- Provide technical assistance and update on OC San's safety and health program.
- Ensure effective communication of Committee activities to employees and management.
- Assist chairpersons with annual report.

VI. Procedure

A. In addition to the responsibilities listed in Section V, Safety and Health Committee members may engage in the following:

- Review the results of investigations of occupational accidents resulting in occupational injury, illness, or exposure to hazardous substances.
- Review, determine and/or assign root cause analyses and corrective actions.
- Submit suggestions to management and/or Risk Management for the prevention of future incidents where appropriate.
- Review the results of investigations of alleged hazardous conditions brought to the attention of any Safety and Health Committee member. When determined necessary by the Safety and Health Committee and/or Risk Management, the Safety and Health Committee may assign two (2) members, one (1) Employee representative, and one (1) Management representative, to attend or conduct an inspection/investigation and assist in developing remedial solutions. Committee members will not participate in personnel matters and disciplinary action assignments.
- The Safety and Health Committee shall give enough advance notice of an intended inspection to allow a division representative to accompany the Safety and Health Committee on said inspection. If the division does not choose to participate, the Safety and Health Committee members may make the inspection alone.
- Prepare recommendation as to feasibility and appropriateness of employee safety suggestions, to include anonymous safety suggestions.
- Evaluate and make recommendations for safety recognition.
- Risk Management may request participation from the Safety and Health Committee during a Cal/OSHA worksite inspection. The committee may participate in determining abatement action taken by OC San to abate citations issued by Cal/OSHA.
- Review and make recommendations on any new or revised safety policy. Copies of proposed changes to safety rules or regulations will be provided to the Safety and Health Committee at least thirty (30) days prior to implementation. In the event the proposed change(s) requires stakeholders to meet and confer prior to implementation, the established implementation and posting procedure will be followed which will include Safety and Health Committee review prior to implementation.

- Annually evaluate the effectiveness of OC San's safety and health program to determine what changes are needed to improve safety and health protection. The Safety and Health Committee will prepare a written report of the findings of the evaluation to be submitted by March 31st to the General Manager, Executive Management, Managers, and the Bargaining Units.
- Participate in the scope development, review, and development of recommendations on studies conducted by engineering and other departments that are principally focused on safety issues.

VII. Meeting Frequency

A. Safety Committee will meet monthly.

B. The proposed date, time, location, and duration of the next meeting will be confirmed during each meeting.

C. All Safety and Health Committee activities, meetings, field inspections, and authorized training will be completed during normal work hours. Overtime to perform Safety and Health Committee business must be authorized and approved by supervision in advance pursuant to established OC San procedure. Every effort will be made to conduct all Safety and Health Committee activities within the regular working hours of all members to avoid incurring overtime.

VIII. Agenda

A. Chairpersons will jointly develop the meeting's agenda at least two weeks prior to the meeting with the support of Risk Management. The meeting agenda will be distributed to all committee members at least one week prior to the meeting. If there are materials for read-ahead, those with responsibility for the material will attempt to distribute the material ahead of the meeting.

B. The agenda should include the following at a minimum:

- Date, time (starting and ending) and location of meeting.
- Roll call and introduction of visitors.
- Read/review minutes of lasts meeting.
- Approval of last meeting minutes.
- Discussion of unfinished business (reports held over, corrections, suggestions).
- Discussion of new business (incident investigations, welfare)
- Report on safety incidents
- Review of near misses and hazard recognition
- Committee and Subcommittee reports
- Suggestions
- Miscellaneous (inspection reports, special speakers, etc.)
- Announcement of next meeting.

IX. Minutes

A. Risk Management is responsible for documenting minutes of the meeting and recordkeeping.

B. Minutes from past meetings will be reviewed and approved during the Safety and Health Committee meeting. Risk Management will update minutes as needed or requested.

C. Risk Management will make available written records of all the issues discussed at Committee meetings. Meeting records shall be maintained for at least one (1) year. Confidential information will not be shared. Bargaining Units retain the right upon request to obtain confidential information only as agreed to in Memorandum of Understanding (MOU) or by law.

X. Rules of Operation

A. All members are responsible to review and commit to these rules.

B. Enhanced and effective communication is the primary objective.

C. Full and equal participation is required by all members.

D. Be punctual and come prepared.

E. Always maintain an atmosphere of mutual respect.

F. Concentrate on issues within our control.

G. Maintain confidentiality and respect.

H. Everyone will be allowed to voice opinions and concerns.

I. One person speaks at a time. No sidebar conversations.

J. Place phones in silent or vibrating mode while meetings are in session. If call is urgent, exit the meeting location and answer the call.

K. If a member is unable to attend the Safety and Health Committee meeting, inform the Risk Management Administrative Assistant before the start of the meeting.

XI. Subcommittees

A. Subcommittees can be formed by the Safety and Health Committee at any time. Subcommittees can be permanent or temporary.

B. Subcommittees must be overseen by the Safety and Health Committee.

C. The Safety and Health Committee shall document the purpose, goals, objectives, and procedure in which the Subcommittee will be executed.

XII. Safety Coordinator

A. Safety Coordinators are to include one employee from each Division or Department with the goal of representing their division or Department at the Safety and Health Committee meetings.

B. Safety Coordinators will serve a one (1) year commitment fulfilling the duties and responsibilities of a Safety Coordinator within their Division or Department. Supervision will reassign new Safety Coordinators as needed.

C. Safety Coordinator duties include but are not limited to:

- Conducting workplace inspections to identify unsafe conditions and submit service requests for repair or replacement.
- Participate in monthly Safety and Health Committee meetings.
- Consult with employees within their division or Department regarding safety concerns or areas for improvement.
- Assist or participate with Safety and Health Committee investigations, inspections, and initiatives.
- Report on safety issues or best practices.

XIII. Training

Safety and Health Committee members will be provided training on hazard recognition and incident investigation with additional trainings as needed. A training plan maybe developed by the Safety and Health Committee and submitted to the OC San for approval. All training will be conducted at OC San facilities unless it is determined that a specific training program cannot be delivered at OC San due to cost, or the availability of an instructor.

XIV. Recordkeeping

All records (i.e., inspections, recommendations, minutes) concerning Safety and Health Committee activities are maintained on the Risk Management intranet site in the Safety and Health Committee folder.

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XV. References

Injury and Illness Prevention Program

XVI. Revision History

Version	Date	By	Reason
1.0	04/26/2010	Thompson, Rob	Initial Program
2.0	08/27/2012	Hernandez, Ken	Periodic Program Update
3.0	07/31/2020	Frattali, John	Periodic Update – Refer to Program Change Log
4.0	12/7/2021	Huynh, Brian	Annual Policy Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-101 (Ver. 4) Periodic Workplace Inspection
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The Orange County Sanitation District (OC San) is committed to providing a safe and healthy work environment. Employees of OC San may be required to perform periodic workplace inspections as part of their job duties. Workplace inspections reduce the risk of occupational injuries and illnesses by identifying unsafe and unhealthy conditions and providing the opportunity for such hazards to be abated before injuries or illnesses can occur. Workplace inspections also provide an opportunity to verify compliance with applicable regulations and established workplace safety standards.

II. Background

OC San has developed the Periodic Workplace Inspection Program in accordance with the state of California Occupational Safety and Health Administration (Cal OSHA) regulations, including the Injury and Illness Prevention Program (Title 8, California Code of Regulations (CCR), Section 3203). This is an addition to the required hazard assessment survey of OC San that occurred when the OC San Injury and illness Protection Program was first created.

The Program is designed to use inspection time most efficiently, to provide a consistent method of recording observations, and to reduce the possibility of important items being overlooked.

It is the expectation of OC San that all designated employees participate in periodic workplace inspections for office, laboratory, and other workplaces such as shops, wastewater treatment process structures, and electrical buildings. Inspections at a minimum are to be conducted quarterly, except where specified elsewhere in this Program.

III. Responsibilities

A. Risk Management

1. Develop and update the Periodic Workplace Inspection Program in accordance with applicable regulations and guidance documents.
2. Will evaluate workplace inspection programs on an annual basis.
3. Will provide Hazard Recognition training for employees.
4. Will provide and update workplace inspection checklists.
5. Will retain all completed workplace inspections.

6. Will review written reports.

B. Management

1. Promote and maintain a safe work environment.

2. Attend or delegate participation with the quarterly workplace inspection.

3. Review and complete workplace inspection checklist.

4. Ensure corrective actions are completed for hazards identified in their areas, including on the spot corrections, work orders, and small project requests.

5. Corrective actions to be identified within three working days of discovery.

6. Contact Risk Management if support is needed when addressing workplace hazards.

7. Track and ensure identified deficiencies have been corrected in a timely manner. Management's review will include prioritizing actions and verify completion of previous corrective actions.

C. Employees

1. Complete hazard identification training.

2. Participate in workplace inspections.

3. Ensure corrective actions are completed for hazards identified in their areas, including on the spot corrections, completing work orders, and small project requests.

4. Initiate corrective action within three working days, if assigned.

5. Contact Risk Management if help is needed with addressing a workplace hazard.

6. Submit completed inspection checklists to Risk Management.

IV. Inspection Process

A. Inspection Team - Dependent upon scheduling and availability, the inspection team may include the following individuals/groups:

1. Representatives of the organizational unit occupying the location(s) under evaluation.

2. Risk Management safety professionals.

3. Safety Committee members.

B. Inspection Schedule - Inspections are to occur at least quarterly in occupied buildings. Workplace and laboratory inspections may occur at greater frequency due to the increased hazards in these areas.

C. Inspection Checklists – Inspections can be completed using OC San's Incident Management System, Cority. Checklists are available for download or can be completed electronically in the field.

D. Reports – Inspection findings are to be recorded in Cority. Risk Management will be notified immediately upon submission of the inspection checklist.

E. Imminent Danger - Whenever the inspection team determines that a condition or work practice exists, which could reasonably be expected to cause death or serious injury immediately, or before the imminence of such danger can be eliminated through a normal hazard abatement process, the inspection team will appropriately post the hazard, notify employees in the immediate work area, contact Risk Management, notify their supervisor as required, and initiate a hazard abatement process.

F. Hazard Abatement - All unsafe or unhealthy conditions identified must be corrected within a reasonable time frame. The inspection report must suggest appropriate corrective action(s). Hazard abatement actions which are not under the responsibility of OC San or require resources outside of OC San will be forwarded to the appropriate organizational unit. Correction of all unsafe or unhealthy conditions identified must be tracked until the hazard(s) has been mitigated.

G. Process Area Inspections

1. Workplace inspections shall be conducted quarterly to ensure process areas at Plant 1 and Plant 2 are inspected four times a year.

2. Inspection team will consist of one employee from Electrical, Instrumentation, Mechanical Maintenance, Facilities, and Operations.

3. Each route will be inspected and documented with a workplace inspection checklist. Checklists must be filled out.

4. Identified hazards will be marked with an orange tag, photographed, documented, and entered into Maximo or corrected on the spot.

5. Completed checklists will be scanned and saved.

H. Lab and Office Inspections

1. Workplace inspections shall be conducted quarterly to ensure all offices and labs are inspected at least four times a year.

2. Quarterly inspection is the responsibility of the supervisors but can be delegated to another employee to complete.

3. Lab and office inspection shall be completed for each area.

4. Identified hazards will be entered into Maximo to be fixed or hazard can be corrected on the spot.

5. Completed checklist will be scanned and saved.

V. Recordkeeping

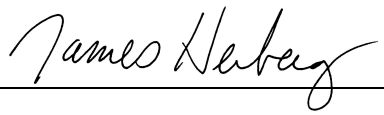
All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VI. References

Title 8 California Code of Regulation, Section 3203 Injury and illness Prevention Program

VII. Revision History

Version	Date	By	Reason
1	03/01/2003	Walker, Sue	New
2	11/09/2009	Walker, Sue	Periodic Update
3	09/08/2020	Stone, Jereme; Frattali, John	Periodic Update – Refer to Program Change Log
4.0	12/07/2021	Lam, Brian	Annual Policy Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-102 (Ver. 6) Personal Protective Equipment (PPE)
Standard Operating Procedure (SOP)	Effective: 11/03/2022 Supersedes: 01/28/2022
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of the Personal Protective Equipment (PPE) Program is to protect, shield or isolate Orange County Sanitation District (Sanitation District) staff and contractors from the risk of injury or illness. The selection of PPE as a control measure should be chosen in conjunction with more effective control measures such as elimination, substitution, engineering controls and administrative controls. PPE hazard assessments will be completed to identify, assess, and control hazards for each similar exposure group, work area or job task.

PPE will be supplied to the Sanitation District staff working in an environment where engineering and administrative controls are not feasible or effective at controlling the hazards. The Sanitation District will train and supply a variety of PPE in accordance with established memorandum of understandings (MOU). The Sanitation District will not perform PPE hazard assessments or supply PPE for Contractors.

This procedure does not address all potential PPE that may be required at the Sanitation District.

II. Background

The Sanitation District has developed this procedure in accordance with the state of California Occupational Safety and Health Administration (CALOSHA) regulations, including *Personal Safety Devices and* (Title 8, California Code of Regulations (CCR), Section 3380) and *Personal Protective Devices* (Title 8, CCR, Section 1514).

This procedure complies with the American National Standards Institute (ANSI) and National Fire Protection Association (NFPA) consensus standards, and National Institute for Occupational Safety and Health (NIOSH) guidance documents.

III. Applicability

This program applies to all work performed by Sanitation District staff and contractors at the Sanitation District treatment plants, pump stations and collection system.

Refer to the non-PPE Locations map under the Maps & Apps section on the San Box for a detailed image of designated PPE free zones.

IV. Definitions

Administrative Controls – Changes in work procedures such as written safety policies, rules, supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to hazardous chemicals or situations.

ANSI – American National Standards Institute is a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.

Arc Flash - An arc flash (also called a flashover), which is distinctly different from the arc blast, is part of an arc fault, a type of electrical explosion or discharge that results from a low-impedance connection through air to ground or another voltage phase in an electrical system.

ASTM – American Society for Testing and Materials is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.

Bloodborne Pathogen – Infectious microorganism in human blood that can cause disease in humans, which may include hepatitis B (HBV), hepatitis C (HCV) and human immunodeficiency virus (HIV).

Contractor – Organization or individual that provides goods and services to the Sanitation District under terms specified in a contract. The term contractor applies to contractors, subcontractors, consultants, and service representatives. Includes job walk attendees.

dBA – Decibels is a unit used to measure noise on the A scale.

Doff – To take off protective equipment.

Don – To put on protective equipment.

Engineering Controls – Controls that are designed into a structure that helps mitigate associated hazards. For example, using a fan or fume hood to dissipate vapors; installing sound dampening materials around a loud piece of equipment; storing flammable solvents in a special cabinet.

Eye/Face Protection – Equipment designed to provide eye or face protection when exposed to hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

Foot Protection – Footwear designed to provide foot and toe protection when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and/or where an employee's feet are exposed to electrical hazards.

Hand and Body Protection – Equipment designed to provide protection to the hands and body during exposures to potential hazards such as skin absorption of harmful substances, sharp objects, abrasive surfaces, punctures, temperature extremes and chemical contact.

Hazard Assessment – The process utilized to identify hazards in the workplace and to select the appropriate PPE to guard people against potential hazards.

Head Protection – Equipment designed to provide protection to the head during exposure to potential hazards such as falling objects, striking against objects or electrical hazards.

Hearing Protection – Equipment designed to provide protection to an individual's hearing during exposure to excessive noise levels above an employee's time-weighted action level.

IDLH – Immediately dangerous to life or health, is an exposure to airborne contaminants that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment.

NFPA – National Fire Protection Association is a United States trade association that creates and maintains private, copyrighted standards and codes for usage and adoption by local governments.

OPIM – Other potentially infectious materials are a type of bloodborne pathogen, which includes human bodily fluids, any unfixed tissue or organ, and HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium.

OSHA – Occupational Safety and Health Administration is an agency of the United States Department of Labor, with a mission to assure safe and healthful working conditions by setting and enforcing standards and by providing training, outreach, education, and assistance.

Personal Protective Equipment (PPE) – Equipment designed to provide protection to the wearer from potential hazards to the eyes, face, hands, head, feet, ears, extremities, and respiratory system.

PFD – Personal floatation device is a piece of equipment designed to assist a wearer to keep afloat in water.

Respiratory Protection – Equipment designed to provide protection to the wearer from potential inhalation hazards such as vapors, mists, particulates, and gases.

Work Zone – An area delineated by Supervision or Contractors for protecting employees from vehicular traffic or operating heavy equipment, intervention from non-authorized persons or personnel and adjacent construction work. The work zone shall be defined as the area within 25 feet of the actual construction work in progress.

V. Responsibilities

A. Program Administrator

Risk Management will serve as the Program Administrator to ensure program development and maintenance, including but not limited to:

- Ensuring the hierarchy of controls are followed when determining the method to manage hazards and risks. PPE shall be considered the last line of defense for controlling and mitigating hazards.
- Ensuring that PPE hazard assessments are completed to determine required PPE.
- Providing training and technical assistance on the proper use, inspections, storage, care, and cleaning of approved PPE.
- Provide re-training as needed and as required by certain programs.
- Maintaining records of PPE training and hazard assessments.

- Reviewing and updating the program for overall effectiveness on an annual basis.
- Communicating PPE requirements to Sanitation District staff and contractors through written memos, SAFE bulletins, tailgate meetings, training, and posting of this program.
- Maintain a list of approved PPE.

Risk Management approves PPE used by Sanitation District employees. PPE may be issued by the Warehouse or special ordered through vendors. Sanitation District employees can submit PPE requests to Risk Management. The PPE requests must include the type and manufacturer of the requested equipment. Contractors, vendors, and consultants are responsible for providing their own employees with the required PPE.

B. Supervision

Supervisors or designee have the primary responsibility for implementation and enforcement of the PPE program, which includes:

- Ensuring that PPE program elements are followed and that employees properly use and care for PPE.
- Ensuring that all their employees are equipped with the necessary PPE.
- Seeking technical assistance from Risk Management regarding selection, use and care of PPE.
- Notifying Risk Management when new hazards are introduced or when processes are added or changed.
- Ensuring defective or damaged equipment is immediately replaced.
- Ensuring that employees are trained on how to wear, store, and clean PPE.

C. Employees

Sanitation District staff shall wear PPE in accordance with the written PPE hazard assessments maintained by Risk Management.

Personnel who wear PPE must:

- Use, maintain, inspect, clean, and store their PPE per manufacturer recommendations and their training.
- Inform their Supervisor of PPE needs or the need to repair or replace defective PPE.
- Attend required training sessions.
- Adhere to specific PPE requirements for established work zones, even if the requirements are more stringent than the Sanitation District policy and/or OSHA regulations.
- Employees may not loan PPE to Contractors.

D. Contractors

Contractors must have a written PPE program meeting at least the requirements of this program and any applicable governmental regulations not covered by this program.

Contractors are responsible for conducting their own PPE assessments based on the work they are performing. Contractors are responsible for providing PPE to their own employees

Contractors may not wear a level of protection less than PPE required by this program or PPE assessment for the specific work area(s).

Contractors are responsible for establishing and maintaining work zones. The work zones shall be clearly marked with required PPE for safe entry.

Contractors are responsible for selection, inspection, care, storage, and maintenance of their PPE. The PPE must be approved/rated and used per manufacturer instructions.

VI. Procedure

Employee exposure to workplace hazards shall be minimized by employing engineering and/or administrative controls, where feasible. When hazards cannot be effectively controlled, PPE must be used to provide employees protection from workplace hazards.

A. PPE Hazard Assessment

Hazard assessments shall be performed to determine the need for and proper selection of PPE. PPE hazard assessments will be completed for tasks completed by each similar exposure group. Hazard assessments will not be completed for administrative offices. The hazard assessment is a written certification that identifies:

- The work area and/or job classification being assessed,
- The person certifying that the evaluation has been performed,
- Date of the hazard assessment,
- Work activities performed and related exposure from anticipated hazards, and
- PPE required to prevent exposure to the anticipated hazards, whether hazards can be eliminated without the use of PPE.

The hazard assessment will be completed through the following process:

1. Survey – A walk-through survey of the workplace will be performed to identify foot, head, eye, face, full body, and hand hazards, including workplace layout, operations performed, and existing engineering and administrative controls, as well as existing PPE. Supervisors and employees from each work area that are being assessed will be notified and involved in the assessment process.
2. Analyze Data – Following the walk-through survey, the data will be organized and an estimate of the potential for injuries made. Risk Management will also review historic near miss and injury reports. The data analysis will consider level of risk by determining the frequency, severity, and probability of injury. Engineering and administrative controls will be implemented if feasible to reduce the risk of injury. If chemicals are involved, Safety Data Sheets (SDS) will be reviewed to determine adequate level of protection.
3. Select PPE – After considering other controls, PPE shall be selected that provides a minimum level of protection to protect employees from the observed hazards. Consideration will be given to limitations of the PPE, work environment (i.e., cold, hot, outdoors), comfort and fit. Limitations may include restricted movement due to weight, restricted vision to visual field, difficulty communication, psychological stress, heat stress, facial hair, or body shape.

4. Written Certification – Once completed, signed, and dated, the written certification (hazard assessment) will be reviewed by Risk Management with the exposure groups and maintained electronically and/or as a hardcopy for employee access and periodic review.
5. Reassessment – The PPE hazard assessment will be reviewed whenever there are changes in the workplace (e.g., new processes or different process materials) or changes in the work practices, to determine suitability of previously selected PPE. The PPE hazard assessment will also be updated if near miss or injury investigations have determined that the PPE was inadequate or created a greater hazard.

Completed PPE hazard assessments are managed electronically at the San Box website. For task-based assessments, PPE will be dictated in Job Safety Analyses (JSAs).

Contractors must develop and review PPE hazard assessments with their employees for the work they are performing. The contractor may include the PPE hazard assessments as part of their Injury and Illness Prevention Program (IIPP) or Site-Specific Safety Program (SSSP) as a standalone PPE program or in part of their JSAs.

B. Inspection, Maintenance and Disposal

1. Inspection and Maintenance

All PPE and work wear must be inspected prior to each use for defects such as missing or defective parts, imperfect seams, soil, tears, scratches, stiffness, distortion, discoloration, cracks, pinholes, etc. Inspections shall be performed in accordance with the manufacturer instructions and training.

PPE that does not pass inspection shall be immediately repaired (where appropriate) or discarded and replaced. Defective PPE shall be reported immediately to supervision.

PPE shall be replaced when it has been involved in an incident or when the manufacturer established life expectancy is reached. Life expectancy or “end of life” is a limiting date of use or maximum service time.

PPE should not be painted or modified in any way. Marking of PPE with a pen or permanent marker is only permitted on manufacturer approved and provided tags.

Non-disposable PPE shall be regularly cleaned with soap and water, compatible equipment cleaning solution, or wipes. Avoid using harsh chemicals which can cause deterioration, cracking, or weakening of the PPE. Reusable ear plugs, earmuffs and respirators should be cleaned after each use. Refer to the manufacturer instructions for cleaning.

2. Storage

PPE must be stored to protect against dust, sunlight, extreme heat or cold, excessive moisture and damaging chemicals. PPE should be stored in a dry and clean place, where it can be easily accessed and is not exposed to potentially damaging conditions. The PPE must be stored in accordance with the manufacturer’s instructions.

The Warehouse will manage bulk storage and distribution of new PPE. New (unused) PPE shall be kept in its sealed package (where applicable) until use.

3. Disposal and Decontamination

PPE must be disposed in approved containers. Disposable PPE shall be removed and discarded as soon as the work task is complete and never reused. Disposable PPE used for removal of regulated wastes (i.e., asbestos, lead) shall be disposed in accordance with state and federal requirements for the specific hazardous waste operation.

Non-disposable PPE must be decontaminated and sanitized before being reused. Contaminated PPE which cannot be properly decontaminated by normal procedures must be disposed of accordingly. PPE that may contain residual contamination shall not to be worn in offices, control rooms, lunchrooms, clean change rooms, etc., where the contamination can spread, exposing non-protected personnel. This PPE must be decontaminated prior to entry into such areas. Decontamination of PPE will be performed using soap and water, unless if manufacturer instructions specify differently.

Protective clothing such as work uniforms and laboratory coats shall be laundered through an approved Sanitation District vendor to prevent cross-contamination. Employees issued uniforms must wear only Sanitation District issued protective clothing in industrial areas (treatment plant, pump stations, collections, electrical rooms, etc.).

C. Donning and Doffing

Depending on the level of PPE required, donning (putting on) and doffing (taking off) procedures will vary. Manufacturer instructions for specific PPE must always be followed to ensure proper fit and wear. PPE shall only be worn as designed. PPE that does not fit properly or is improperly worn may not provide adequate protection or could cause a greater hazard. PPE shall always be removed in a manner that does not cause contamination. Sanitation District employee may wear Level D, modified Level D or Level C PPE. Below are donning and doffing procedure for Level C. Adjust for modified Level D.

1. Donning Level C PPE (Tyvek and Respirator)
    a. Put on chemical resistant boots.
    b. Put on chemical resistant coveralls over boots.
    c. Tape over coveralls (where coveralls meet the boots).
    d. Put on inner gloves.
    e. Put on respirator.
    f. Pull coveralls over inner gloves.
    g. Put on outer gloves.
    h. Tape over coveralls (where coveralls meet the outer glove).
2. Doffing Level C PPE (Tyvek and Respirator)
    a. Remove all tape.
    b. Remove outer gloves.
    c. Remove suit, being careful not to touch any potentially contaminated surfaces.
    d. Remove respirator without loosening straps.
    e. When removing respirator, pull respirator out and away from face.

f. Remove boots.

g. Remove inner gloves.

3. Procedure for Removing Gloves

a. Grasp outside of glove with opposite hand; peel off.

b. Hold removed glove in gloved hand.

c. Slide fingers of ungloved hand under remaining glove at write.

d. Peel glove off over first glove.

e. Discard gloves in waste container.

D. Training

Each employee who is required by this program to use PPE shall be trained to know the following:

- When PPE is necessary.
- What PPE is necessary.
- How to proper don, doff, adjust, and wear PPE.
- The limitations of the PPE.
- How to maintain, clean, and properly store the equipment when not in use.

Proper fitting instructions for specialty PPE, (i.e., fall protection harness, respirator) shall include a hands-on demonstration and practice in a normal atmosphere before being required to work in the work area with hazards present.

Employees shall demonstrate an understanding of the training and ability to use PPE properly. Risk Management and/or supervision may determine that an employee may require retraining if they do not have the understanding and skills required to wear PPE.

Retraining is required for, but not limited to the following situations:

- Changes in workplace render previous training obsolete.
- Changes in type of PPE to be used render previous training obsolete.
- When employee demonstrates lack of use, improper use, or insufficient skill or understanding of assigned PPE.

The level of training provided will vary with the level of risk involved and the complexity and performance of the equipment. Employees who use hearing protection devices, fall protection equipment, respirators and arc flash PPE will require a more comprehensive degree of training with regular refresher courses, whereas the training for protective gloves for dealing with hazardous substances may require demonstration only. The frequency of the refresher courses required in the case of PPE for high-risk situations will depend on the nature of the equipment, how frequently it is used and the needs of the employees using it.

E. Voluntary Use of PPE

If personnel choose to use PPE for a task that does not require its use, the employee must be fully trained on the proper use and limitations of the respective PPE.

For voluntary use of respiratory protection, the employee will be provided a copy of Appendix D of OSHA's Respiratory Protection Standard (Title 8, California Code of Regulations, Section 5144). If it is determined by Risk Management that the respirator creates a greater hazard to the user, the employee will not be permitted to use that respirator. The user must be medically cleared to use the respirator and be fit tested.

VII. Types of PPE

A. Eye/Face Protection

Employees working in or adjacent to locations with risk of receiving eye injuries, such as but not limited to flying objects and hazardous chemicals shall wear appropriate eye and/or face protection. Eye and face protection must be designed, constructed, and tested in accordance with ANSI Z87.1-2020.

1. Safety Glasses

Safety glasses with side shields are required for impact protection, such as flying fragments, objects, large chips, particles, sand, and dirt. Safety glasses shall bear the marking of ANSI Z87.1 Sunglasses are not permitted unless approved by ANSI.

Safety glasses shall be worn in all areas designated or posted as a PPE required area. When working indoors, clear, or amber safety glasses shall be worn. Additionally, safety glasses are required when working or walking through:

- Treatment Plant 1 and 2
- Maintenance Shops
- Automotive Shop
- Pump Stations
- Collection Systems
- Laboratories
- Contractor or Maintenance Delineated Work Areas
- During walking tours for visitors/contractors.

2. Prescription Safety Glasses

Wearers of prescription (Rx) eyewear should wear eye protection that incorporates the prescription in its design or that can be worn over prescription lenses without disrupting the prescription eyewear or protective eyewear.

Wearing of contact lenses is prohibited in working environments that have harmful exposure to materials or light flashes, except where medically approved and have been established for the protection of the employee.

Sanitation District staff shall be entitled to one pair of clear lenses and one pair of either shaded (sunglasses) lenses or photo gray lenses per fiscal year. The prescription safety glasses must have permanent side shields. Employees requiring vision correction shall notify the Risk Management Division. The employee will be reimbursed up to $160 per pair to cover the cost.

In the event employee's prescription safety glasses are lost, stolen or damaged beyond repair, the employee shall fill out a lost property document. This document shall be signed by their supervisor and forwarded to the Risk Management Division along with their damaged safety

glasses. The Risk Management Division shall make the determination to replace the employee's safety glasses or require the employee to replace them at their own cost.

3. Safety Goggles

Safety goggles are intended to shield the user's eyes from infectious fluids and chemicals.

Goggles shall fit the face immediately surrounding the eyes and form a protective seal around the eyes. Goggles prevent objects from entering under or around the goggles. Prescription lenses may be incorporated into goggles or mounted behind the goggle.

Safety goggles shall be worn when handling chemicals or in the presence of airborne mists or wastewater with the potential for splashing.

Safety goggles may be obtained from the warehouse. The Warehouse provided safety goggles are both impact and chemical splash resistant and meet the ANSI Z-87.1 standard for impact.

4. Tinted Goggles / Welding Helmets

Tinted goggles and/or welding helmets are required when exposed to injurious light rays, such as those produced during welding, brazing or torch cutting. The lens shall be appropriately shaded based on the type of injurious light produced. The table below provides filter lens shade numbers for protection against radiant energy.

Operation	Electrode Size (inch)	Metal Thickness (inch)	Arc Current	Minimum Shade Number	Suggested Shade Number
Shielded Metal-Arc Welding	< $^3/_{32}$	n/a	<60	7	-
	$^3/_{32}$ – $^5/_{32}$	n/a	60-160	8	10
	$^5/_{32}$ – $^1/_4$	n/a	160-250	10	12
	> $^1/_4$	n/a	250-550	11	14
Gas Metal-Arc Welding (MIG/MAG) and Flux Cored Arc Welding (FCAW/FCA)	n/a	n/a	<60	7	-
	n/a	n/a	60-160	10	11
	n/a	n/a	160-250	10	12
	n/a	n/a	250-550	10	14
Gas Tungsten arc welding (TIG)	n/a	n/a	<50	8	10
	n/a	n/a	50-150	8	12
	n/a	n/a	150-500	10	14
Carbon Arc Cutting	n/a	n/a	<500	10	12
	n/a	n/a	500-1000	11	14
Plasma Arc Welding	n/a	n/a	<20	6	6-8
	n/a	n/a	20-100	8	10
	n/a	n/a	100-400	10	12
	n/a	n/a	400-800	11	14
Plasma Arc Cutting	n/a	n/a	<300	8	9
	n/a	n/a	300-400	9	12
	n/a	n/a	400-800	10	14
Carbon Arc Cutting	n/a	n/a	<500	10	-
	n/a	n/a	500-1000	11	-
Carbon Arc Welding	n/a	n/a	n/a	14	14
Torch Brazing	n/a	n/a	n/a	3	3-4

Operation	Electrode Size (inch)	Metal Thickness (inch)	Arc Current	Minimum Shade Number	Suggested Shade Number
Torch Soldering	n/a	n/a	n/a	2	-
Gas Welding (light)	n/a	< 1/8	n/a	4	-
Gas Welding (medium)	n/a	1/8 – 1/2	n/a	5	-
Gas Welding (heavy)	n/a	> 1/2	n/a	6	-
Oxygen Cutting (light)	n/a	< 1	n/a	3	-
Oxygen Cutting (medium)	n/a	1 – 6	n/a	4	-
Oxygen Cutting (heavy)	n/a	> 6	n/a	5	-

As a rule of thumb, employees shall wear a shade that is too dark, then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. If oxygen gas welding or cutting produces a high yellow light, use a filter that absorbs yellow visible light.

Tinted goggles shall be tight fitting to the face and worn during cutting, torch brazing, and soldering activities, or to prevent against glare when working with or adjacent to the above listed operations.

Welding helmets shall be selected when flying particles or spatter are a hazard because of the above listed operations. Welding helmets shall be selected that protect the face, forehead, neck, and ears. Safety glasses shall be worn under welding helmets.

Tinted goggles and a face shield may be worn to protect against flying particles or splatter.

5. Face Shields

Face shields alone will not protect against impact hazards. Face shields must be worn in combination with safety glasses or goggles. Face shields should fit snugly to the user.

Face shields are intended to shield the user's face and neck from flying objects, molten metal, liquid chemicals, acids or caustic liquids, or injurious light, depending on the type of face shield.

Face shields must be worn for the following activities, except where a greater level of protection is provided to the user's face:

- Operation of a pressure washer, air knife or hydro excavation equipment.
- When handling chemicals or wastewater with the potential for splashing (i.e., laboratory, chemical deliveries, line breaking, sampling, parts cleaning).
- Operating equipment in a machine shop that generates flying objects (i.e., drill press, lathe).
- Operation of hand-held saws (i.e., chainsaw, concrete saw, pneumatic or electric cutting wheel).
- Operations that cause flying particles or injurious light (i.e., grinding, chipping, polishing, cutting, or welding).
- When performing electrical-related activities as required by the Sanitation District's Electrical Safety Program (SOP-205).

6. Full-Face Respirators

The lens of a tight-fitting full-face respirator shall be approved for impact protection. Safety glasses are not required to be worn in combination with full-face respirators when impact protection is afforded.

B. Head Protection

Hard hats shall protect employees from impact and penetration, falling or flying objects, and limited electrical shock and burn. Hard hats must also be water resistant, slow burning, come with instructions explaining adjustment and replacement of suspension in head band, and comply with ANSI/ISEA Z89.1-2014(R2019). Hard hats must be Type 1, Class E rated.

Hard hats shall be replaced when they become damaged, contaminated or has been struck by an object of sufficient size to potentially contaminate its integrity. Hard hats shall not be modified, painted, or coated with any material (including stickers). Hard hats that are faded, cracked, chipped, or deformed shall be disposed of and replaced with a new hard hat immediately.

Hard hats may not be worn backwards, except where the helmet has been approved for such wear. Hard hats approved for multi-directional wear will be marked with two arrows curving to form a circle.

Only manufacture approved head covering and sweat bands designed to be worn in conjunction with hard hats will be allowed to be worn under the hardhat. Wearing baseball caps, hoods, or beanies under hardhats is prohibited. Welding caps or bandannas are permitted only if they are worn smoothly on the top of the head. Do not store anything between the hard hat and the suspension. Where chin straps are utilized on hard hats, they must have a low breaking strength to prevent strangulation.

Hard hats shall be worn in the following areas or situations, except where it has been determined to be a PPE free zone (i.e., offices, walking path, inside cabbed vehicles):

- Treatment Plant 1 and 2
- Pump Stations
- Collection Systems
- Contractor or Maintenance Delineated Work Areas
- During walking tours for visitors/contractors
- During crane and hoisting operations
- Where the potential for falling or flying objects exists (i.e., working below elevated location, excavations)
- Where the potential exists for impact and penetration (i.e., low clearance, operating aerial lift equipment)

Where there is a risk of injury of hair entanglement in moving parts of machinery or equipment, combustibles or toxic contaminants, employees shall confine their hair to eliminate the hazard.

VIII. Hand/Arm Protection

Gloves shall at a minimum meet the ASTM standards for which they were designed. Hand protection shall be worn by employees to lower their risk of exposure to the following hazards:

- Skin absorption of harmful materials such as chemicals, hazardous waste, untreated and treated sewer sludge grit, biosolids, wastewater, plant water and blood borne pathogens.

- Materials with sharp edges, burrs, splinters, nails, or other hazards that can cut or puncture the skin.
- Thermal burns due to welding, torch cutting, line steaming work, or electrical work.
- Electrical shock and burns from working with electrical voltages above 50 volts.

Where there is a potential for injury of the arms, appropriate sleeves or protective jackets shall be worn. Hand and arm protection must be designed, constructed, and tested in accordance with ANSI/ISEA 105-2016.

Not one glove will provide coverage for all potential hazards. Gloves shall be selected to protect against majority of the applicable hazards. Selection shall include design, construction and fit, as well as allergies. For example, some people are allergic to latex. Gloves may be disposable or reusable.

A. Material Handling

These gloves are generally made of a hybrid and composite material, including leather, synthetic leather, waterproof materials, and high-performance fibers. These gloves are typically thinner, which allow for greater dexterity and flexibility.

Leather and rubber coated cotton gloves function best when handling materials that have the possibility to cause cuts, abrasions, or puncture wounds to unprotected hands.

These gloves provide minimal thermal protection and chemical resistance. These gloves shall never be used for welding, torch cutting operations, chemicals, for sample collection or working with wastewater. Leather and rubber coated cotton gloves shall be disposed of once they develop holes or stitching defects. Saturated leather gloves will increase the contact time with pathogens found in sludge and wastewater with the possibility to increase the risk of infection through cuts or abrasions on the hands. Leather gloves cannot be disinfected without the risk of permanent damage to the gloves.

B. Cut-Resistant Gloves

These gloves reduce the risk of cuts, punctures, and abrasion injuries. These gloves are made of special materials, which includes Kevlar®, Spectra® fiber, stainless steel, and tough synthetic yarns. These materials may be used in linings, constructed in combination with leather, or in a variety of coatings to improve grip.

C. Welding and Heat Resistant Gloves (Hot Work)

These gloves protect against high temperatures, flames, and sparks. Welding gloves are typically made of elk skin, cowhide, deerskin, pigskin, or goatskin, and cover the forearm.

Heat resistant gloves shall be selected based on the type of heat: dry or moist, thermal, or atmospheric, or if open flame and spark is present.

D. Chemical Resistant Gloves (Chemical Handling)

These gloves shield against penetration from petrochemicals, acids, solvents, detergents, alkalis, and a wide range of other chemicals and substances. Glove materials consist of latex, PVC, nitrile, butyl, and neoprene. The material of glove will provide protection against specific chemicals with various degradation values.

Chemical handling gloves shall be inspected for holes, tears, worn and/or discolored areas on the surface of the gloves before they are used to handle chemicals. Defective chemical gloves are not usable and must be disposed of immediately.

To prevent chemicals from meeting the user's arms, the bottom of chemical gloves shall be cuffed or rolled to capture any chemical that runs down the glove.

Chemical non-disposable gloves shall be rinsed with clean water after each use. Rinsing the gloves shall prevent residual chemical for meeting unprotected skin, tools, and other materials. *Note: eyewash stations are not to be used to rinse chemical gloves. Chemical gloves can last several years if they are properly maintained.*

Rubber gloves should be used when handling plant water hoses and working inside the rag and grit facilities. These gloves can be sanitized after use.

E. Voltage Insulating and Lineman's Gloves

Natural rubber gloves provide protection against electrical shock. These gloves are divided into the following classes: 00, 0, 1, 2, 3, and 4. Proof test voltages and maximum use voltages are provided by the manufacturer based on tests performed for each class. Leather protector gloves are typically worn over these gloves to protect against cuts, abrasions, and punctures. Refer to the Sanitation District's Electrical Safety Program (SOP-205) for additional information.

F. Emergency Response/ Medical Treatment

Nitrile gloves shall be worn when it can be reasonably anticipated that an employee may have contact with blood, other potentially infectious material, mucous membranes, or when handling contaminated items or surfaces.

Only first aid and bloodborne pathogen trained employees (i.e., Emergency Response Team, Contractors Emergency Response) are to provide medical treatment.

Gloves shall be disposable. Gloves shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier has been compromised.

IX. Foot Protection

Sanitation District staff and contractors shall wear protective footwear to prevent injuries from falling objects, electrical shock, hot and/or corrosive materials, crushing or penetrating objects, slippery surfaces, and abnormally wet locations. Contractors are responsible for selecting and providing foot protection to its employees.

Foot protection must be designed, constructed, and tested in accordance with ASTM F2414-18, Standard Test Methods for Foot Protection and ASTM F2414-18, Standard Specification for Performance Requirements for Protective Toe Cap Footwear.

Foot protection shall be worn in the following areas or situations or where posted, except where it has been determined to be a PPE free zone (i.e., offices, walking path, inside cabbed vehicles):

- Treatment Plant 1 and 2
- Maintenance Shops

- Automotive Shop
- Pump Stations
- Collection Systems
- Contractor or Maintenance Delineated Work Areas
- Where the potential exists for falling or crush objects, slippery surfaces, electrical shock, puncture, and chemical hazards.

Fully enclosed shoes must always be worn in laboratory areas and by visitors participating in tours of the plant processes. Foot protection worn in offices areas shall be compliant with Sanitation District uniform policies.

Protective footwear that is defective or inappropriate to the extent that its ordinary use creates the possibility of foot injuries shall not be worn. Materials shall not be installed on the footwear, including but not limited to, tar, safety caps, waterproofing or insect repellants. These materials can alter the protective nature of the footwear rendering it in adequate.

Sanitation District staff will be provided with protective footwear per the following schedule:

Division Name/Number	Frequency
• Risk Management, 161 • Materials Management, 230 • Information Technology-Infrastructure, 250 • Resource Protection-Source Control, 620 • Design, 760 • Construction Management, 770	Annually
• Collections Facilities O&M, 820 • Fleet Services, 822 • O&M, 830, 840, 870, 880	Annually
• Public Affairs, 140 • Contracts and Purchasing, 230 • Information Technology-Enterprise Information Management, Cyber Security, Business Solutions and Support, 250 • Resource Protection-Engineering, 620 • Project Management Office, 750	Every Other Year
• Administrative, clerical support, intern staff, and other employees not listed	Upon Supervisor Request

Sanitation District employees who receive foot protection shall be required to wear them when performing their work duties; failure to do so may result in disciplinary action.

Risk Management shall provide a voucher of $225 to Local 501 and OCEA staff, and $170 to SPMT staff to cover the cost of protective footwear.

Sanitation District supplied foot protection shall at the minimum met the following safety requirements:

- Meet ASTM F2413 performance standards.
- Constructed of materials suitable for its intended exposure and shall provide protection, comfort, and wear ability.

- Completely enclose the foot.
- Constructed with a protective toe cap (steel toe or composite).
- Have slip-resistant soles.
- Have a heel height of one inch or less.

Some job classes will require footwear to meet additional safety requirements. For example, electrical and instrumentation staff will require foot protection made of leather. Risk Management will provide each job class with the minimum footwear requirements during footwear procurement, which are selected according to the completed PPE hazard assessments. The selected footwear considers performance requirements for impact resistance, compression resistance, metatarsal protection, conducting properties, electric hazards, static dissipative properties, and puncture resistance properties.

X. Body Protection

Body protection generally refers to outer garments, such as suits, chaps, vests, sleeves, coats, etc. to protect the body from injury. Body protection shall be worn when employees are exposed to hazardous substances or flying objects.

Conditions that may warrant body protection include:

- Exposure to sharp knives or power cutting tools (i.e., chainsaw).
- Exposure to summer or winter weather.
- Exposure to water (where a drowning hazard exists).
- Contact with intense heat, including molten metal and other hot materials (i.e., steam, sparks, etc.).
- Contact with chemicals (i.e., mixing, delivery, sampling, inspection).
- Working with hazardous substances (i.e., asbestos, lead, mold, hydrocarbons).
- Contact with infectious materials, including blood and body fluids.
- Contact with rough or abrasive surfaces.
- Working with electrically energized conductors or parts.
- Working around motorized vehicles and heavy equipment where there is a need to enhance a person’s visibility.
- Exposure to biological hazards associated with wastewater, raw sludge and/or processed sludge.

Refer to the Sanitation District’s Electrical Safety Program (SOP-205) for information regarding protection against electrically energized conductors or parts.

Loose sleeves, tails, ties, lapels, cuffs, and other loose clothing which can become entangled in moving machinery shall not be worn. Any clothing that has been saturated or impregnated with flammable liquids, corrosive substances, irritants, or oxidizing agents shall be removed and not worn until properly laundered.

Most body protection garments inhibit the loss of heat from the body and therefore can increase physical and psychological burdens on the user. Comfort and heat illness shall be considered for adequate hazard protection.

A. High-Visibility Safety Apparel

The purpose of high-visibility safety apparel (HVSA) is to decrease the likelihood of worker fatalities or injuries caused by motor vehicles and construction vehicles and equipment.

HVSA is personal protective safety clothing intended to enhance a person's visibility during both daytime, nighttime, and other low-light conditions especially when around vehicular traffic. Manufactured HVSA worn by Sanitation District staff and contractors shall meet the design and testing requirements of ANSI 107.

HVSA shall be worn during the following work activities or conditions; all other uses of HVSA will be considered a best practice:

- Employees working as a flagger (i.e., spotting heavy equipment, locations on construction site where barricades and warning signs cannot control moving traffic).
- Employees (on foot) exposed to the hazard of vehicular traffic; this includes employees walking through the plant, using the walking path, walking through, or working in a construction zone, or working along a Sanitation District roadway.
- Employees working from dusk to dawn (night or low light level work)
- Employees exposed to public vehicular traffic in the vicinity of excavations.
- Employees exposed to either public traffic or to construction vehicles and equipment.
- Employees within the right-of-way of a Federal-aid highway who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work area.

HVSA can be upgraded to the higher-class level during periods of inclement weather, when complex backgrounds are present in work area, or where employees perform tasks that diverts attention away from approaching vehicles

Class II and III approved high-visibility vests are Warehouse stocked items. Approved jackets are supplied by the individual division. Contractors are responsible for providing their own HVSA for its employees.

Optional high-visibility accessories include headwear, gloves and arm or leg bands. These accessories are not intended to be used alone as high-visibility personal protective equipment and do not contribute to minimum area calculations that designate Class 2 or 3.

All high-visibility items have a limited lifetime that varies with use. It is the responsibility of supervision and the wearer to periodically evaluate quality of the HVSA. Garments should be replaced or repaired when they are torn, noticeably faded, soiled, cracked, burned, heavily abraded or damaged. HVSA shall never be modified by removing sleeves and reflective material or by adding pins, buttons, or patches. High visibility equipment requires 360 degrees of visibility, meaning that the wearer can be seem from all sides.

Sanitation District staff and contractors shall wear the following HVSA in accordance with the California Manual on Uniform Traffic Control Devices (California MUTCD) and the ANSI 107, which is consistent with the below listed work activities or conditions:

1. OC San employees, contractors, vendors, and consultants are required to wear a minimum of Class II (Type R) HVSA in the following areas:
    a. Working in a work zone established for construction and/or maintenance-related projects. *Note: The work zone shall be large enough to accommodate the work being performed to prevent injury to employees walking, driving, or working near the construction*

and/or maintenance-related activity. The work zone shall be delineated by one or more of the following: barricades, temporary fencing, or caution tape. Signage shall accompany work zone delineation where it may not be obvious that such activities are underway. The HVSA must be upgraded to a Class III HVSA if the maximum posted speed limit along the public right-of-way exceeds 50 mph or if the work is performed during nighttime hours.

b. When working in vicinity of operating mobile equipment (scissor lift, aerial lift, forklift, excavator, etc.).

c. When working between dusk and dawn (night or low light level)

d. When working in the public right-of-way where vehicle speeds do not exceed 50 miles per hour (mph).

e. When working at off site adjacent to the public right-of-way and not protected by Sanitation District property fencing.

f. OC San property where the potential exists for exposure to vehicular traffic (i.e., walking path, riding Sanitation District owned bicycles).

g. Pump stations when working adjacent to the public right-of-way and not protected by Sanitation District property fencing.

h. Private property not owned by the Sanitation District.

2. OC San employees, contractors, vendors, and consultants must upgrade to Class III (Type R) HVSA under the following conditions:

   a. Public right-of-way where vehicle speeds exceed 50 mph and/or during nighttime hours.

   b. When working along a federal-aid highway during daytime or nighttime hours.

3. Supplemental Class E

   a. Class E is comprised of high-visibility garments such as pants, bib overalls, shorts, and gaiters.

   b. These items do not qualify as meeting the requirements of the standard when worn alone, but when a Class E item is worn with a Class II or Class III garment, the overall classification of the ensemble is Class 3.

B. Lab Coats

Employees working in the laboratory, where small containers of biological agents or hazardous chemicals are handled, shall wear lab coats since the potential for contact with significant quantities of hazardous materials is relatively low. Lab coats protect the body against incidental exposure and minimize potential for contamination. Lab coats shall be worn in conjunction with other protective equipment such as gloves and safety glasses.

Employees working in the laboratory with significant potential for chemical contact (such as large splashes), shall layer chemical resistant sleeves or aprons over lab coats. To minimize potential exposure, work shall be performed in fume hoods to the greatest extent possible.

C. Splash Aprons

Splash aprons shall be provided where the potential for chemical contact is greater than incidental. If the exposure potential is limited, then an apron, gloves and sleeves may be

sufficient. Chemical splash aprons should be worn over work uniforms or lab coats when collecting wastewater and sludge samples from pumps or lines that are pressurized.

D. Coveralls

Coveralls shall be provided where the potential for exposure to chemicals is high or where large splashes could impact the legs, arms, and torso. The coverall shall consider the physical state of the chemical, including permeability and penetration.

Coveralls shall also be provided where there is potential for exposure to wastewater, raw or processed sludge, when entering confined spaces, when exposed to blood or OPIM, and when handling hazardous materials such as asbestos, lead and mold.

Coveralls shall always be worn per manufacturer instructions. Coveralls shall not be worn or tied around the waste, not fully zipped, and shall be replaced when ripped, torn or otherwise damaged.

E. Cut-Resistant Clothing

Personnel operating chain saws shall wear cut resistant sleeves and apron chap leg protection, which meets the design, performance, testing and certification requirements of ASTM F1897, Standard Specification for Leg Protection for Chain Saw Users. Thermal Protection (Hot Work)

Welding aprons, sleeves, bibs, and coats shall be flame-resistant (FR) to reduce the severity of burn injuries, short duration thermal exposure from fires and burns caused by sparks, spatter, or radiation. Clothing worn underneath FR clothing should be non-meltable garments. FR clothing shall conform to NFPA 2112.

Risk Management will make the determination if uniforms, insulated jackets, or other PPE shall be Flame-Resistant (FR). This determination will be made on a case-by-case basis for the work activities performed.

XI. Electrical PPE

Employees that are exposed to electrical hazards, as defined by OC San's Electrical Safety Program (SOP-205) and NFPA 70E, and where the risk of that hazard cannot be adequately reduced by engineering controls, shall wear arc-rated (AR) personal protective equipment that is designed and constructed for protection against electrical hazards (shock and arc flash). Electrical safe work conditions shall be established where feasible. Refer to the arc flash analysis for level of AR PPE required to establish an electrically safe working condition or if exposed to electrical hazards.

Arc-rated PPE will only be provided to trained and authorized employees expected to work on, operate and maintain electrical equipment per the documented risk analysis or in accordance with NFPA 70E. Only trained and qualified employees shall work in the restricted approach boundary, arc flash boundary, or wear electrical PPE. All protective equipment shall be NFPA 70E approved.

Risk Management will make the determination if uniforms, insulated jackets, or other PPE shall be arc-rated (AR). This determination will be made on a case-by-case basis for the work activities performed.

Refer to the electrical safety program (SOP-205) for further guidance.

XII. Uniforms

Uniforms issued by the Sanitation District are designed to provide a level of personal protection from biological hazards; however, uniforms should be considered as minimal protection and should be worn in conjunction with other protective clothing noted herein. Sanitation District employees who are eligible for issued uniforms shall wear them during the performance of their job duties. Uniforms are considered PPE, so damaged uniform parts shall be returned to the supplier. The supplier must promptly replace damaged uniforms with undamaged uniforms. Uniforms that are worn, tattered, or have patched holes will not be acceptable as replacements.

If a uniform becomes contaminated with chemicals, wastewater, or wastewater byproducts (i.e., sludge, effluent, etc.), the uniform must be cleaned by the professional uniform service. If it is reasonable to suspect that a uniform has not been contaminated, employees may also take uniforms home for washing. Any uniforms washed at home must be washed separately from other clothes. Arc flash rated uniforms must always be washed by the professional uniform service. Sanitation District employees whose job task requires them to perform job tasks in cold and/or wet environments shall be provided with insulated jackets or rain suits.

XIII. Work on or Adjacent to Water

Personal floatation devices (PFDs) shall be provided where employees work exposes them to the hazard of drowning. PFDs shall be Type I, as approved by the United States Coast Guard, pursuant to 46 Code of Federal Regulations (CFR) 160 for Coast Guard Lifesaving Equipment Specifications).

Type I PFDs provide the most buoyancy and are therefore effective for all waters, especially open, rough or remove waters where rescue may be delayed.

Type I PFDs shall be provided for every employee whose job task requires them to perform work from a boat or where there is a danger of falling into water (i.e., process tank, shoreline, river). PFDs shall comply with the following requirements:

- Kept in good serviceable condition.
- Must be the appropriate size for the attended user.
- Must worn during tasks where drowning exists.
- Shall not be stowed in plastic bags, locked compartments or have materials stowed on top of them.

The Type I PFD should be inspected for rips, tears, and holes, and to verify that the seams, fabric straps, and hardware are okay. There should be no signs of waterlogging, mildew odor, or shrinkage of buoyant materials. PFDs shall be maintained in good condition. Damaged PFDs shall be removed from service. Damaged PFDs can affect buoyant properties or capability of being fastened. PFDs are required when working on OC San’s Ocean Monitoring vessel, the Nerissa. This requirement is when the vessel is underway or where directed by the boat captain.

Sanitation District employees who work where there is potential for them to fall into a body of water and drown are required to wear a life jacket or have an established personal fall restraint system that prevents them from falling into the body of water and prevents the worker from being submerged underwater.

XIV. Hearing Protection

Hearing protective devices shall be made available for employees exposed to an 8-hour time-weighted average (TWA) of 85 decibels (dB) and greater, or equivalently a dose of 50 percent.

Hearing protective devices shall be worn by employees under the following conditions, or where posted:

- When exposed to an 8-hour TWA of 90 decibels and greater, or equivalently a dose of 100 percent or where posted.
- When exposed to an 8-hour TWA of 85 decibels (or 50 percent dose) and have measured hearing loss.
- Where required by the electrical safety program (SOP-205) or elsewhere required by the hearing conservation program (SOP-106).
- When performing hot work operations such as welding, grinding, or cutting metal.
- When performing work that even momentarily generate high impact noise like metal clanging, jack hammering

When operating or working adjacent to heavy equipment or power tools. *Note: wearing HPDs while welding, grinding, or cutting metal not only provides protection against injurious noise generated by equipment, but also protects the ear from heavy metals and chemical fumes that can have a negative effect on the auditory system.*

Types of Hearing Protective Devices include, but not limited to:

- Disposable Earplugs
- Reusable Earplugs
- Earmuffs

Refer to the Sanitation District's Hearing Conservation Program (SOP-106) to review the use, selection, storage, audiometric testing, training, proper fit, and cleaning of hearing protective devices. Hearing protection shall be provided to employees at no cost. Contractors are responsible providing its employees with such devices.

XV. Personal Air Monitor

OC San staff and contractors who enter the plant process areas or pump stations are required to wear a 4-gas air monitor. Staff, and contractors are required to wear the air monitor due to potential exposure to: CO, H_2S, LEL (flammable environments), and O_2 deficiency or enrichment. Personal air monitors measure for flammable atmospheres (lower explosive limit expressed as % LEL), due to the use of non-intrinsically safe equipment or personal electronic devices in a hazardous (classified) location. Lower explosive limit, or LEL is the lowest concentration of a substance that will produce a fire or flash when an ignition source is present. Concentrations below the LEL are too lean to burn.

Personal air monitors that are equipped to monitor percent oxygen, hydrogen sulfide, carbon monoxide or other air contaminants, do not replace air monitoring equipment required for confined space entry and excavations.
Employees must immediately leave the work area whenever an equipment alarm sounds due to:

- Combustible gas detected above 10% LEL

- Sensor failure.
- Low battery alarm.
- Or other air monitoring parameter alarm (if equipped).

It is recommended that Sanitation District personal air monitor be bump tested prior to each use and calibrated every 180 days. The Sanitation District maintains docking stations in occupied buildings for calibration of equipment.

Employees must be trained on proper use, calibration, limitations, and alarms for the personal air monitor used.

XVI. Personal Fall Protection Equipment

Personal fall protection shall only be used where a fall hazard cannot be eliminated or passive fall protection systems (i.e., physical barriers) are not feasible. Personal protective equipment is used as part of an active fall arrest or fall restraint system, which includes a safety harness, lanyard, and anchorage device.

Personal fall arrest or fall restraint systems shall be designed, selected, and installed under the supervision of a qualified person. Only trained and authorized persons may use personal fall arrest or fall restraint systems.

Fall protection equipment shall be inspected by the authorized person before each use to verify that it has not sustained any wear or damage that would require removal from service. Fall protection equipment (including rescue equipment) shall also be inspected twice annually by a competent person to verify the equipment is safe for use. If inspections reveal damage or determined to be inadequate for service shall be tagged so equipment will not be returned to service. The competent person shall destroy the equipment.

Equipment that is involved in a fall shall be removed from service and destroyed or sent back to the manufacturer for repair. Exposure to sunlight, chemicals, fumes, or moisture can degrade the equipment’s hardware and material.

Types of fall protection equipment include, but not limited to:

- Full Body Harness
- Lanyard/Self-Retracting Lifelines
- Anchorage Devices

Refer to the Sanitation District’s Elevated Work and Fall Protection Program (SOP-626) for roles and responsibilities, harness, lanyard and anchorage devices, design requirements, maintenance and storage, inspections, and training.

XVII. Respiratory Protective Equipment

Respiratory protective equipment is a type of PPE that is used to protect an individual wearer against the inhalation of hazardous substances (i.e., dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors) in the workplace air. Respiratory equipment shall only be used where the hazard cannot be eliminated or reduced using engineering and administrative controls. Atmosphere Supplying Respirators shall always be used where the concentration or type of air contaminant is unknown and exposure to high levels can be reasonably anticipated. That way

you do not have to always default to it when it is unreasonable. All respirators must have National Institute of Occupational Safety and Health (NIOSH) approval.

Only trained and authorized employees shall wear respiratory protection. All respirator usage, which includes disposable respirators, air-purifying respirators (APR), and supplied air respirators (SAR or SCBA), medical clearance, require annual fit testing and training prior to use. Employees who request for voluntary use of respirators will be required to fill out a form titled Appendix D of OSHA's Respiratory Protection Standard (Title 8, California Code of Regulations, Section 5144), which will be provided by Risk Management.

Types of respirators include, but are not limited to:

- Air Purifying Respirators
- Atmosphere Supplying Respirators/Self-Contained Breathing Apparatus (SCBA)
- Negative and Positive Pressure Respirators

Refer to the Sanitation District's Respiratory Protection Program (SOP-109) for more information regarding selection, fit testing, medical surveillance, use, inspections, storage, maintenance, and training for respiratory protective equipment.

XVIII. PPE Zones

A. PPE Free Zones

All administrative office space and buildings, controls rooms, parking lots, break rooms and lavatories do not require personal protective equipment under normal conditions. Sanitation District staff shall wear approved uniforms when working in these areas.

Staff that are not issued a uniform shall adhere to the Sanitation District dress guidelines. Staff who are not issued shall adhere to the PPE guidelines when in the process area, this includes sleeved shirt, long pants, closed toed shoes.

For purposes of this section, normal conditions do not include construction and/or maintenance-related activities. When such activities are performed in these areas, barriers shall be erected to keep unauthorized persons out or work shall be conducted after hours. Persons working in the construction and/or maintenance work zone shall wear PPE appropriate for the hazards.

For purposes of this section, control rooms refer to a ventilated, heated, and/or air-conditioned space, which is occupied by Sanitation District staff, and serves as a central space to monitor and control process equipment (e.g., Truck Loading Control Room, Dewatering Control Room, Central Generation Control Room, etc.).

B. Designated PPE Areas

1. General Requirements

PPE shall be worn by Sanitation District staff and contractors when working in the process areas of Plant 1 and 2, pump stations and collection systems, fleet services, rebuild shop, maintenance shops, warehouses, laboratories, and the designated walking path. Maps are provided on the San Box highlighting PPE required areas.

Food and drink may not be consumed in PPE required areas, except in designated break areas, vehicles, carts, conference rooms, office areas and lunchrooms.

The minimum required PPE to enter these areas is listed below. Additional PPE may be required depending on the hazard assessment for the specific job or task. The PPE hazard assessment will define required PPE under these specific conditions.

2. Process Areas, Pump Stations, Collection System

    - hard hat.
    - safety glasses with side shields.
    - protective footwear.
    - high-visibility safety apparel.
    - personal gas monitor (when inside process area, pump station or collection system).
    - hearing protection (where labeled, required by PPE hazard assessment or JSA)
    - arc flash protective equipment (where required by arc flash analysis, JSA and PPE hazard assessment).
    - fall protection (as required by PPE hazard assessment or JSA).
    - respiratory protective equipment (as required by PPE hazard assessment, JSA or JHA).
    - gloves (as required by PPE hazard assessment).

Notes: Process areas are defined as preliminary, primary, secondary and solids handling processes where the treatment of wastewater and the recovery of solids are being conducted.

3. Chemical Handling and Odor Control Areas

    - hard hat.
    - safety goggles.
    - face shield (as required by PPE hazard assessment).
    - coveralls – chemical and/or flame resistant (as required by PPE hazard assessment)
    - protective footwear.
    - personal gas monitor (when inside process area, pump station or collection system).
    - hearing protection (where labeled).
    - gloves (as required by PPE hazard assessment).

Note: This section refers bulk chemical containment areas, odor control complexes, and chemical handling and bulk deliveries.

4. Fleet Services, Rebuild Shop, Maintenance Shop, Warehouses

    - safety glasses with side shields or goggles.
    - face shield (as required by PPE hazard assessment).
    - welding hood or tinted goggles (as required by PPE hazard assessment).
    - coveralls (as required by PPE hazard assessment).
    - protective footwear.
    - hearing protection (where labeled or required by PPE hazard assessment).
    - respiratory protective equipment (as required by PPE hazard assessment or JSA).
    - flame-resistant sleeves/clothing (as required by PPE hazard assessment or JSA).

- high-visibility safety apparel (warehouse only per forklift traffic).
- gloves (as required by PPE hazard assessment or JSA)

5. Laboratories

- laboratory coat (as required by PPE hazard assessment).
- closed-toed shoes.
- safety glasses or goggles.
- face shield (as required by PPE hazard assessment).
- gloves (as required by the PPE hazard assessment).

Notes: For purposes of this section, laboratories do not include the conference rooms, hallways, lavatories, and offices within the laboratory building.

6. Designated Walking Path

- closed-toed shoes
- high-visibility safety apparel

PPE	Process Areas, Pump Stations, Collection Systems	Chemical handling and Odor Control Areas	Fleet Service, Rebuild Shop, Maintenance Shop, Warehouse	Lab	Designated Walking Path
Hard Hat	X	X			
Safety Glasses/ Goggles	X	X	X	X	
Protective Footwear/ Closed Toed Shoes	X	X	X	X	X
High Visibility Safety Apparel	X		X		X
Personal Gas Monitor	X	X			
Hearing Protection *	X	X	X		
Arc Flash Protective Equipment*	X				
Fall Protection*	X				
Respiratory Protective Equipment*	X		X		
Gloves*	X	X	X	X	
Coveralls*		X	X		
Face Shield*		X	X	X	
Flame-Resistant Sleeves/Clothing*			X		
Laboratory Coat*				X	
Welding Hood or Tinted Goggles*			X		

* *Dependent upon where labeled, required by PPE hazard assessment, JSA, JHA, arc flash analysis.*

Note: Refer to list above for details on appropriate PPE in designated locations.

7. Construction and Maintenance-Related Work Zones

PPE shall be worn by Sanitation District staff and contractors when working in construction and/or maintenance-related work zones. A work zone is a delineated area to protect employees from vehicular traffic, operating heavy equipment, and/or potential hazards of demolition and renovation activities.

The work zone shall be large enough to accommodate the work being performed to prevent injury to employees walking, driving, or working near the construction and/or maintenance-related activity. The work zone shall be delineated by one or more of the following: barricades, temporary fencing, or caution tape. Signage shall accompany work zone delineation where it may not be obvious that such activities are underway. Signage shall include required PPE for entry.

The following PPE must be worn in all work zones at a minimum:

- hard hat.
- safety glasses with side shields.
- protective footwear.
- high-visibility safety apparel (minimum Class II or Class III Type R).
- personal gas monitor (when inside process area, pump station or collection system).
- hearing protection (where labeled, required by PPE hazard assessment or JSA).
- gloves (as required by PPE hazard assessment).

Contractors are responsible for establishing PPE required areas in accordance with the PPE hazard assessments completed for their work. Contractors are responsible for the safety of their employees and visitors while on the project site. If a contractor establishes more stringent PPE requirements than listed above, all Sanitation District staff who enter the work zone are required to abide by those requirements.

XIX. PPE Quality Standards

PPE at a minimum shall meet the following consensus standards:

Personal Protective Equipment	Standard
Eye and Face Protection	ANSI/ISEA Z87.1-2020
Industrial Head Protection	ANSI/ISEA Z89.1-2014(R2019)
Foot Protection	ASTM F2412-18a ASTM F2413-18
Leg Protection	ASTM F1897-20
Hand Protection	ANSI/ISEA 105-2016
High Visibility Safety Apparel	ANSI/ISEA 107-2020
Respiratory Protection	ANSI Z88.6

Personal Protective Equipment	Standard
Hearing Protection	ANSI A10.46 ANSI S3.19 ANSI S3.44
Shock and Arc Flash Protection	NFPA 70E NFPA 2112
Personal Floatation Devices	Title 46, Code of Federal Regulations, Section 160

XX. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The Sanitation District Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of Sanitation District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XXI. References

ANSI/ISEA 105-2016 American National Standard for Hand Protection.

ANSI/ISEA 107-2015 American National Standard for High-Visibility Safety Apparel and Accessories.

ANSI/ISEA Z87.1-2015 American National Standard for Occupational and Educational Personal Eye and Face Protection Devices.

ANSI/ISEA Z89.1-2014 American National Standard for Industrial Head Protection.

ASTM F1506-02 Standard Performance Specification for Flame Resistant Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards.

ASTM F2412-11 Standard Test Method for Foot Protection

ASTM F2413-11 Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear

NFPA 70E Standard for Electrical Safety in the Workplace.

NFPA 2112 Standard on Flame-Resistant Clothing for Protection of Industrial Personnel Against Short-Duration Thermal Exposures from Fire.

Title 8, California Code of Regulations, Section 1514, Personal Protective Devices.

Title 8, California Code of Regulations, Section 15148, Protection from Electric Shock.

Title 8, California Code of Regulations, Section 1598, Traffic Control for Public Streets and Highways.

Title 8, California Code of Regulations, Section 1519, Sanitation.

Title 8, California Code of Regulations, Section 1521, Ear Protection.

Title 8, California Code of Regulations, Section 1522, Body Protection.

Title 8, California Code of Regulations, Article 10, Personal Safety Devices and Safeguards, Sections 3380 - 3390, Personal Protective Devices

Title 8, California Code of Regulations, Section 3389, Life Rings and Personal Floatation Devices

Title 8, California Code of Regulations, Section 5098, Hearing Protectors.

Title 8, California Code of Regulations, Section 5144, Respiratory Protective Equipment.

Title 8, California Code of Regulations, Article 107, Dust, Fumes, Mists, Vapors and Gases, Sections 5150 – 5155.

Title 8, California Code of Regulations, Section 5193, Bloodborne Pathogens.

XXII. Revision History

Version	Date	By	Reason
0	01/27/2002	Tomko, Lisa	Initial
1	03/22/2006	Tomko, Lisa	Program Update
2	11/15/2006	Matte, James	Program Update
3	01/05/2011	Carnahan, Pat	Program Update
4	06/23/2020	Frattali, John	Periodic Update – Refer to Program Change Log
5	12/07/2021	Frattali, John	Annual Policy Review – Refer to Program Change Log
6	11/02/2022	Frattali, John	Uniform color changes/HVSA section; OCEA Boot Allowance Change

ORANGE COUNTY SANITATION DISTRICT	SOP-106 (Ver. 3) Hearing Conservation Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

A. The purpose of the Hearing Conservation Program is to provide a standard policy on the health and safety requirements and processes for all employees with potential exposure to excessive noise and to comply with occupational exposure limits. This is completed through equipment selection, exposure assessments, training, and annual hearing tests.

B. It is the policy of Orange County Sanitation District (OC San) to protect its employees from occupational injuries by implementing and enforcing safe work practices, including the appointment of qualified persons to manage this program.

C. OC San has developed this program in accordance with the state of California Occupational Safety and Health Administration (Cal/OSHA) Article 105 Control of Noise Exposure. Cal/OSHA mandates employees be provided with protection against noise exposure when sound levels exceed 90dBA 8-hour TWA and the OC San Hearing Conservation Program is applied when employee noise exposures meet the action level, 85 dBA 8-hour TWA.

II. Background

A. This program applies to all OC San employees. All employees conducting work where the potential for noise exposure exceeds 85 dBA as an 8-hour time-weighted average (TWA), or a dose of 50 percent, shall be supplied with appropriate hearing protection devices as required by this policy, at no cost.

III. Definitions

Action Level: An 8-hour time weighted average of 85 decibels measured on the A-scale, slow *response, or equivalently, a dose of 50 percent.*

Audiogram: A chart, graph, or table resulting from an audiometric test showing an individual's *hearing threshold levels as a function of frequency.*

Baseline Audiogram: The audiogram against which future audiograms are compared.

Decibel (dB): The unit of measure of sound level.

dBA (decibels-A-Weighted): A unit of measurement of sound level corrected to the A-weighted scale, as defined in ANSI S1.4-1971, using a reference level of 20 micropascals (0.00002 Newton per square meter.)

Hertz (Hz): A unit of measurement of frequency, numerically equal to cycles per second.

High Noise Area: An area where equipment operates more than 85 dBA.

Noise Dosimeter: An instrument used to measure sound level over the course of a work shift.

Noise Reduction Rating (NRR): Measure of the estimated attenuation capacity of a hearing protector to represent the approximate noise reduction, in dBA.

Otological Examination: A medical exam performed by an otologist (physician specialized in diagnosing and treating illnesses and injuries related to the ear).

Similar Exposure Group: Group of workers having the same general exposure profile for the agent(s) being studied because of the similarity and frequency of the tasks performed, the materials and processes with which they work, and the similarity of the way they perform tasks.

Sound Level: A measurement derived from the mathematical derivation of the measured A weighted
average sound level when compared to a standard reference pressure of 20 micropascals.

Sound Level Meter: An instrument used for the measurement of sound level.

Standard Threshold Shift (STS): A change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in 2000, 3000 and 4000 Hz in either ear.

Time-Weighted Average (TWA): The average time, over a given work period (e.g., 8-hour workday) of a person's exposure to a chemical or an agent. The average is determined by sampling for the contaminant throughout the period sampled.

IV. Responsibilities

A. Risk Management

1. The Hearing Conservation Program shall be managed and administered by the Risk Management Division. The division shall be responsible for the program development, including annual review.
2. Provide and coordinate initial and refresher training. Maintain training logs and rosters.
3. Administer noise monitoring, coordination of audiometric testing, and employee training.
4. Receive and review employee reports of occupational noise hazards and coordinate a response, including but not limited to, performing specialized noise hazard evaluations, and providing corrective actions.
5. Record a confirmed work-related average threshold shift in either ear of 10dB HL in 2000, 3000 and 4000 Hertz after applying the standard age correction methodology on the OSHA log within 6 days of identification.
6. Post noise hazard signage when noise levels exceed established noise action levels.
7. Coordinate with Divisions to ensure that appropriate noise controls are specified for new or retrofitted equipment.

B. Supervision

1. Ensure that all employees working in potentially hazardous noise areas (as defined herein) are familiar with the contents of this program.

2. Take appropriate steps to minimize the risk of noise-inducted hearing loss that may include implementing noise control measures, as well as the provision of hearing protection devices, as required.
3. Communicating in with and appropriately managing employees and contractors, ensuring that employees have appropriate training and qualifications, and for ensuring requirements of this program are met.
4. Request occupational noise evaluations when in their judgement they are needed. They may be guided by reports of noise that causes interference with conversing (face to face, via radio or via telephone) or by repeated complaints about loud and intrusive noise, ringing in the ears following exposure to noise, etc.

C. Employees

1. Wear assigned hearing protective devices where noise levels exceed 85 dBA as an 8-hour time-weighted average or in identified high noise areas.
2. Participate in medical surveillance program, including annual audiogram and hearing conservation training, as applicable.
3. Participate in exposure monitoring and noise assessment studies, as required.
4. Report areas of concern related to potentially high noise to supervision and Risk Management. Maintain hearing protective devices in sanitary condition and proper working order.
5. Shall be provided their acoustic and audiometric records upon request to the employee/former employee requesting the documentation, representatives designated by the employee and OSHA.

V. Exposure Monitoring and Assessments

A. Noise surveys and dosimetry shall be completed to determine areas where hearing protection is required and determine which employees must be included in this hearing conservation program, as dictated by the action level of 8-hour TWA of 85 dBA.

1. General Requirements
    a. When information indicates that an employee’s exposure may equal or exceed the action level, or equivalently a dose of 50 percent, OC San will obtain measurements for employees who will be exposed at or above that level.
    b. Monitoring will be completed either by area monitoring or personal monitoring that is representative of the employee’s exposure. Where there is high worker mobility, significant variation in sound, or component of impact sounds, representative personal dosimetry sampling will be used.
    c. Generally, buildings that contain loud pumps, motors, fans, and other mechanical equipment will be evaluated. OC San will not perform monitoring of administrative offices, storage buildings, or warehouses. The purpose of the assessment is to evaluate potential engineering/administrative controls and to assist in identifying the necessity for hearing protective devices.
    d. Measurements of the A-weighted sound pressure level in a workplace shall be performed instantaneously, during normal working conditions, using the slow response setting of a sound level meter.

e. Noise exposure levels will be determined through the integration of all continuous, intermittent, and impulsive sounds between 80 dB and 130 dB. Tasks and observations with regards to the potential noise exposure shall be documented, with recommendations respecting the measures collected to limit the employee's exposure to noise.

f. Exposure assessment equipment (sound level meters, dosimeters, acoustic calibrators) shall be properly calibrated and maintained.

g. Monitoring will be repeated whenever a change in production, process, equipment, or controls increase the noise exposures to where an employee may be exposed over the action level, or attenuation provided by hearing protective devices is rendered inadequate.

h. If an employee's noise exposure exceeds an 8-hour TWA of 85 dBA, or equivalently, a dose of 50 percent, monitoring shall be repeated every 2 years for the affected exposure group.

i. Monitoring shall be repeated within 3 months when there is a change in equipment, production processes or maintenance routines.

2. Area Monitoring and Personal Monitoring

a. Noise surveys shall be conducted in areas where noise exposures may exceed 80 dBA and where employees are most likely to work. Surveys will be performed to evaluate controls to reduce noise exposures, and to establish where signage is needed.

b. In areas where noise exposures exceed 80 dBA, an area or personal monitoring will be used to determine if employees noise exposures exceed an 8-hour TWA of 85 dBA.

c. Monitoring may be repeated at increased frequency if employees are developing significant threshold shifts.

d. If employees move around frequently, similar exposure groups (SEG) will be created to determine representative noise exposures.

e. If area monitoring is used to determine an employee's exposure, Attachment A will be used to compute the noise exposures.

f. Results of area monitoring will be documented on facility maps. The completed area noise surveys are available in Attachment B.

g. Employees will be notified of the monitoring results in writing as soon as they are available if they are exposed at or above the action level.

VI. Reduction / Control of Noise Exposure

A. Where reasonably practicable, OC San will utilize engineering controls or other physical means other than hearing protective devices to reduce the exposure to sound of employees to a level that does not exceed an 8-hour TWA of 85 dBA or equivalently, a dose of 50 percent.

B. Hierarchy of noise controls will be followed:

1. Elimination – where feasible the noise source will be eliminated to prevent risks to employees.

2. Engineering Controls – to reduce the noise at the source to eliminate the need for hearing protection, audiometric testing, and other elements of the hearing conservation program. Possible controls include reduction of noise at the source, enclosure of the noise source,

enclosure of employees, acoustical treatment of the rom, separating workers from the noise, or combination thereof.

3. Administrative Controls – education and training will be provided as a primary administrative control. Controls can also include work-rest cycles and infrequent work tasks. These controls are aimed at reducing time worker is exposed.

4. Use of Personal Protective Equipment (PPE) – when engineering controls cannot remove or reduce the noise hazard, hearing protective devices in the form of ear plugs and/or earmuffs shall be used.

VII. Warning Signs

A. Employees shall be notified of work locations in which noise levels exceed 85 dBA by signs, appropriately posted, indicating the requirement of hearing protection.

B. Signs shall be placed in conspicuous locations, easily seen by employees prior to entering an area with a noise hazard.

VIII. Hearing Protection Devices

A. General

1. OC San makes hearing protective devices available to all employees exposed to an 8-hour time-weighted average of 85 decibels or greater at no cost to the employees.

2. The Sanitation District shall ensure that hearing protectors are worn by all employees:

   a. Exposed to an 8-hour time-weighted average of 85 decibels or greater, or equivalently, a dose of 50 percent.

   b. When a baseline audiogram has not yet been established and exposure to high noise levels is anticipated, and

   c. Those who have experienced a standard threshold shift.

3. Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided by the employer. The improper fit or selection of hearing protection can lead to permanent hearing loss.

B. Hearing Protection Attenuation

1. Based upon sound levels measured, Risk Management will determine the minimum sound level attenuation required. Hearing protection device manufacture's published NRR are adjusted for employee anatomy variance. To calculate an employee's noise exposure when wearing hearing protection devices:

   a. Obtain the employee's A-weighted TWA.

   b. Take the hearing protection device manufacturer's published Noise Reduction Rating (NRR) of the hearing protection device and subtract 7 dB and this will give you the adjusted NRR. Subtract this adjusted NRR from the A-weighted TWA to obtain the employees noise exposure when equipped with that specific hearing protection device.

Example: If the NRR for an ear plug is 32 you would subtract 7 from the 32 and get a true NRR of 25 dB. So, if the noise level were 105 dB in an area you would subtract 25 dB from 105 dB to get 80 dB exposure to the employee.

c. The hearing protection device NRR is adjusted by to account for the hearing protection device manufacturer's testing methods to determine the NRR. The published NRR is calculated from an average attenuation provided by the hearing protection device to a testing pool. Due to anatomical differences that may lead to varied fit, the 7dB adjustment is used to account for potential overestimations when manufacturers assign NRR ratings.

C. Dual Hearing Protection

1. Earmuffs and ear plugs Noise Reduction Rating (NRR) cannot be directly added together.

2. If earmuffs and ear plugs are used together, 5 dB NRR are added to the higher noise reduction rated device.

3. With combined hearing protection devices, the user must take greater care due to the potential for inability to hear his or her surroundings.

IX. Employee Training

A. The success of this Hearing Conservation Program depends largely on effective employee education regarding all aspects of the program.

B. The primary focus of the training must be on the workers, and they must be informed about the reasons for and the requirements of the Hearing Conservation Program.

C. Annual training is provided to employees enrolled in the Hearing Conservation Program. Employees in the Hearing Conservation Program are employees who are exposed to 85 dBA or greater on an 8-hour time weighted average for 12 or more days per year and/or exceed a peak noise level of 140 dB linear peak.

D. The training shall cover hazards and effects of noise; the purpose, advantages, and disadvantages of various types of hearing protectors; the selection, fitting, and care of protectors; the purpose and procedures of audiometric testing and noise exposure data.

X. Audiometric Testing

A. General

1. All audiograms obtained shall meet the requirements of Cal-OSHA requirements found in Appendix B of Title 8, California Code of Regulations, Section 5097(c).

2. The audiometric testing includes both baseline and annual audiometry for all employees enrolled in the Hearing Conservation Program. The data from these tests shall be maintained by Risk Management.

3. Testing is performed by qualified, third-party audiometric technicians or by approved consultants who specializes in audiometric examinations. The test is made available to employees within one year of an employee's first exposure at or above the action level.

4. Testing is to be provided at no cost to the employees.

B. Baseline audiogram

1. The reference against which future audiograms are compared, should be obtained prior to an employee's first exposure to noise that equals or exceeds the action level. It shall be obtained as soon as possible, but no longer than 6 months, after it becomes known that the employee will be or is exposed to noise that equals or exceeds the action level. Testing to establish a baseline audiogram for employees shall be preceded by at least 14 hours without exposure to workplace noise.

2. This requirement may be met by wearing hearing protectors which will reduce the employee's exposure to a sound level of 85 dBA or below.

3. Risk Management will notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination.

C. Annual Audiogram

1. They are given to all employees exposed to 85 dBA, as an 8-hour time-weighted average, for 12 or more days per year and/or exceed a noise level of 140 dB linear peak. The results are compared to the baseline audiogram to determine if an employee's audiogram is valid and if a standard threshold shift (STS) has occurred. The STS is either a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in 2000, 3000, and 4,000 Hertz (Hz) in either ear, after applying the standard age correction methodology shift of 25 dB HL or more in the same ear and frequency on two consecutive tests at frequencies between 1000 and 6000 hertz. The Offsite Occupational Clinic shall review problem audiograms to determine whether there is a need for further evaluation or referral. If an STS is identified, the employee shall be informed of this fact in writing within 21 days of the determination and shall be fitted or refitted with adequate hearing protectors and required to wear them.

2. If an STS is indicated because of the mobile van audiometric testing, the employee will have a follow-up test to confirm whether the STS is valid. This test shall be conducted at the Offsite Occupational Clinic.

3. At termination of work for the Sanitation District, an employee who has been exposed to noise is required to have an audiometric test performed as well.

4. Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including, as a minimum, 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests of each frequency shall be run separately for each ear.

D. Standard Threshold Shift

1. If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift in one, or both ears, and the employee’s total hearing level is 25 dB or more above audiometric 0 (averaged at 2000, 3000, and 4000 Hz in the same ear(s) as the STS, the injury is to be recorded in the Cal/OSHA Log 300. The employee shall be informed of the STS, in writing, within 21 days of the determination.

   a. Retesting can occur within 30 days of the first test. If the retest does not show an STS, it is not required to be recorded in the Cal/OSHA Log 300. If it does confirm the STS, then it must be recorded on the log within 7 days of the STS. If subsequent testing performed

under the program indicates that an STS is not present, then you may erase or line-out the recorded Log 300 entry.

2. Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, the Safety & Health Division shall ensure that the following steps are taken when a standard threshold shift occurs:
   a. An employee not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them; and
   b. A job restriction stating “Must wear hearing protection if exposed to noise levels exceeding 85 dBA” shall be placed in the employee’s medical file.
   c. The STS will be recorded on the OSHA 300 log as an injury.
   d. The new audiogram will then become the baseline for future comparisons.
3. The employee and his/her supervisor shall be notified of this restriction in writing.
4. The supervisor shall be responsible to ensure the employee properly wears hearing protection
5. An employee already using hearing protectors shall be refitted and retrained in the use of hearing protectors by the Safety and Health Division and provided with hearing protectors offering greater attenuation if necessary.
6. Refer the employee for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if the district suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.
7. Inform the employee of the need for an otological examination if a medical pathology of the ear which is unrelated to the use of hearing protectors is suspected.
8. If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour time-weighted average of 85 decibels indicates that a standard threshold shift is not persistent, the Risk Management Division:
   a. Shall inform the employee of the new audiometric interpretation; and
   b. May discontinue the required use of hearing protectors for that employee.
9. As used in this section, a standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in 2000, 3000 and 4000 Hz in either ear.
10. In determining whether a standard threshold shift has occurred, allowance may be made for the contribution of aging (presbycusis) to the change in hearing level by correcting the annual audiogram according to the procedure described in 8 CCR Article 105, Appendix F: Determination and Application of Age Correction to Audiograms.

XI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the

official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

Noise exposure measurement records and audiometric test records shall be retained in the Safety Division office in accordance with District recordkeeping requirements. The audiometric record shall include:

1. Name and job classification of the employee.
2. Date of the audiogram.
3. Examiner's name.
4. Date of last acoustic calibration of the audiometer.
5. Employee's most recent noise exposure assessment.
6. Date of the last hearing conservation training and the name of the person conducting the training.

XII. References

SOP-102 Personal Protective Equipment

SOP-642 Industrial Hygiene Program

Title 8, California Code of Regulations Article 105, Control of Noise Exposure

XIII. Revision History

Version	Date	By	Reason
1	01/27/2009	Bauer, Welsey	New
2	08/06/2020	Huynh, Brian	Periodic Update – Refer to Program Change Log
3	12/07/2021	Huynh, Brian	Annual Policy Update – Refer to Program Change Log

XIV. Attachments

Attachment A: Noise Exposure Computation

Attachment B: Area Noise Maps

Attachment A

Noise Exposure Computation

I. Computation of Employee Noise Exposure

A. Noise dose is computed using Table A-1 as follows: When the sound level, L, is constant over the entire work shift, the noise dose, D, in percent, is given by: D = 100C/T where C is the total length of the work day, in hours, and T is the reference duration corresponding to the measured sound level, L, as given in Table A-1 or by the formula shown as a footnote to that table.

B. When the work shift noise exposure is composed of two or more periods of noise at different levels, the total noise dose over the work day is given by: D = 100 (C1/T1 + C2/T2 + . . . + Cn/Tn), where Cn indicates the total time of exposure at a specific noise level, and Tn indicates the reference duration for that level as given by Table A-1.

C. The eight-hour time-weighted average sound level (TWA), in decibels, may be computed from the dose, in percent, by means of the formula: TWA = 16.61 log10(D/100) + 90. For an eight-hour work shift with the noise level constant over the entire shift, the TWA is equal to the measured sound level.

D. A table relating dose and TWA is given in Section II.

Table A-1

A-weighted sound level, L (decibel)	Reference Duration, T (hour)	A-weighted sound level, L (decibel)	Reference Duration, T (hour)
80	32.0	106	0.87
81	27.9	107	0.76
82	24.3	108	0.66
83	21.1	109	0.57
84	18.4	110	0.50
85	16.0	111	0.44
86	13.9	112	0.38
87	12.1	113	0.33
88	10.6	114	0.29
89	9.2	115	0.25
90	8.0	116	0.22
91	7.0	117	0.19
92	6.1	118	0.16
93	5.3	119	0.14
94	4.6	120	0.125
95	4.0	121	0.11
96	3.5	122	0.095
97	3.0	123	0.082
98	2.6	124	0.072
99	2.3	125	0.063
100	2.0	126	0.054

101	1.7	127	0.047
102	1.5	128	0.041
103	1.3	129	0.036
104	1.1	130	0.031
105	1.0		

II. Conversion Between "Dose" and "8-Hour Time-Weighted Average" Sound Level.

A. Noise exposure is usually measured with an audio dosimeter which gives a readout in terms of "dose." Dosimeter readings can be converted to an 8-hour time-weighted average sound level (TWA).

B. In order to convert the reading of a dosimeter into TWA, use Table A-2. This table applies to dosimeters that are set to calculate dose or percent exposure according to the relationships in Table A-1. So, for example, a dose of 91 percent over an eight hour day results in a TWA of 89.3 dB, and a dose of 50 percent corresponds to a TWA of 85 dB.

C. If the dose as read on the dosimeter is less than or greater than the values found in Table A-2, the TWA may be calculated by using the formula:

D. TWA = 16.61 log10 (D/100) + 90 where TWA = 8-hour time-weighted average sound level and D = accumulated dose in percent exposure.

Table A-2: Conversion From “Percent Noise Exposure” or “Dose” to “8-Hour Sound Level (TWA)”

Dose or percent noise exposure	TWA
10	73.4
15	76.3
20	78.4
25	80.0
30	81.3
35	82.4
40	83.4
45	84.2
Dose or percent noise exposure	TWA
50	85.0
55	85.7
60	86.3
65	86.9
70	87.4
75	87.9
80	88.4
81	88.5
82	88.6
83	88.7
84	88.7
85	88.8
86	88.9
87	89.0
88	89.1
89	89.2
90	89.2
91	89.3
92	89.4
93	89.5

94	89.6
95	89.6
96	89.7
97	89.8
98	89.9
99	89.9
100	90.0
101	90.1
102	90.1
103	90.2
104	90.3
105	90.4
106	90.4
107	90.5
108	90.6
109	90.6
110	90.7
111	90.8
112	90.8
113	90.9
114	90.9
115	91.1
116	91.1
117	91.1
118	91.2
119	91.3
120	91.3
125	91.6

130	91.9
135	92.2
140	92.4
145	92.7
150	92.9
155	93.2
160	93.4
165	93.6
170	93.8
175	94.0
180	94.2
185	94.4
190	94.6
195	94.8
200	95.0
210	95.4
220	95.7
230	96.0
240	96.3
250	96.6
260	96.9
270	97.2
280	97.4
290	97.7
300	97.9
310	98.2
320	98.4
330	98.6

340	98.8
350	99.0
360	99.2
370	99.4
380	99.6
390	99.8
400	100.0
410	100.2
420	100.4
430	100.5
440	100.7
450	100.8
460	101.0
470	101.2
480	101.3
490	101.5
500	101.6
510	101.8
520	101.9
530	102.0
540	102.2
550	102.3
560	102.4
570	102.6
580	102.7
590	102.8
600	102.9
610	103.0

620	103.2
630	103.3
640	103.4
650	103.5
660	103.6
670	103.7
680	103.8
690	103.9
700	104.0
710	104.1
720	104.2
730	104.3
740	104.4
750	104.5
760	104.6
770	104.7
780	104.8
790	104.9
800	105.0
810	105.1
820	105.2
830	105.3
840	105.4
850	105.4
860	105.5
870	105.6
880	105.7
890	105.8

900	105.8
910	105.9
920	106.0
930	106.1
940	106.2
950	106.2
960	106.3
970	106.4
980	106.5
990	106.5
999	106.6

Attachment A: Noise Exposure Computation

Attachment B

Area Noise Maps

Link to Plant 1 Area Noise Maps:

http://myocsd/hr/safety/Documents/Area%20Noise%20Maps/Plant%201

Link to Plant 2 Area Noise Maps:

http://myocsd/hr/safety/Documents/Area%20Noise%20Maps/Plant%202

Link to Outlying Pump Station Area Noise Maps:

http://myocsd/hr/safety/Documents/Area%20Noise%20Maps/Collections

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-109 (Ver. 4) Respiratory Protection Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

This program establishes respirator guidelines for Orange County Sanitation District (OC San) employees in the use of respiratory protection. It applies to all employees who may use respiratory protection or where atmospheric hazards may necessitate the need for respiratory protection. This program sets forth the requirements for the selection, use, and care of respiratory protective equipment (respirators) by OC San staff.

It is OC San policy to establish procedures and guidelines to identify preferred, standard methods for respiratory protection and to ensure that all workers at all sites comply with these standards. OC San will assess potential respiratory exposure hazards resulting from or encountered by our employees during job activities in accordance with the OC San Industrial Hygiene Program (SOP-642). To the extent feasible, appropriate engineering and/or administrative controls will be used to reduce or eliminate employee exposure to airborne compounds. If those controls are not able to reduce exposure adequately, employees who are exposed or potentially exposed to respiratory hazards at or above the applicable occupational exposure limits are required to wear appropriate respiratory protection.

II. Definitions

Air Purifying Respirator – A respirator with an air- purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned Protection Factor –The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by Section 5144.

Atmosphere Supplying Respirator – A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, including supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or Cartridge – A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand Respirator – An atmosphere –supplying respirator that admits breathing air to the face piece when negative pressure is created inside the facepiece by inhalation.

Emergency – An occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an air-borne contaminant.

Employee Exposure – An exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-Service-Life-Indicator (ESLI) – A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Escape-Only Respirator – A respirator intended to be used only for emergency exit.

Filter or Air Purifying Element – A component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering Facepiece (dust mask) – A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit Factor – A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit Test – The use of protocol to evaluate the fit of a respirator qualitatively or quantitatively on an individual. (See also Qualitative and Quantitative Fit Test).

High Efficiency Particular Air (HEPA) Filter – A filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood – A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately Dangerous to Life or Health (IDLH) – An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individuals' ability to escape from a dangerous atmosphere.

Maximum Use Concentration (MUC) –The maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short term exposure limit, or ceiling limit. When no exposure limit is available for a hazardous substance, an employer must determine an MUC based on relevant available information and informed professional judgment.

Negative pressure respirator (tight fitting) – Respirator in which air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator

Oxygen-Deficient Atmosphere – An atmosphere with an oxygen content below 19.5% by volume.

Physician or Other Licensed Health Care Professional - An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all the health care services.

Positive pressure respirator – respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator

Powered Air-Purifying Respirator (PAPR) – An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator – positive pressure atmosphere supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation

Qualitative Fit Test (QLFT) – A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QNFT) – An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respirator Inlet Covering – The portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with a nose clamp.

Self-Contained Breathing Apparatus (SCBA) – An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service Life – The period that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-Air Respirator (SAR) or Airline Respirator – An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-Fitting facepiece – A respiratory inlet covering that forms a complete seal with the face.

User Seal check – An action conducted by the respirator user to determine if the respirator is properly sealed to the face.

III. Responsibilities

A. Risk Management

1. The Director of Human Resources, Celia Chandler, will oversee the program as the Program Administrator.

2. On an annual basis, will review and update, as necessary, this program and assess the effectiveness of the program.

3. Administer hazard assessments, respirator selection, training, medical evaluations, and fit testing.

B. Managers and Supervisors

1. Ensure participating employees understand and follow the requirements set forth by this policy.

2. Ensure resources necessary to implement this program, including equipment, time for training, medical exams, and fit testing, and other appropriate and necessary resources are available.

3. Ensure employees who use respirators clean, store, and wear respirators correctly.

4. Ensure those employees have been medically cleared to wear respirators.

C. Employees

1. Wear respirators as required by this program.

2. Use and maintain respirators per manufacturer's recommendations and this program.

3. Perform pre-use negative and positive pressure fit check of respirators.

4. Participate in required medical evaluation, training, and fit test prior to assignment.

5. Do not wear a respirator if there is any condition that prohibits a good face to face seal (i.e., facial hair, glasses, loss of weight, and lack of teeth, etc.).

IV. Hazard Control Evaluation

A. When selecting the appropriate hazard control, following the hierarchy of controls. The risk controls include the following:

1. Elimination – always look to eliminate the airborne contaminate if possible.

2. Substitution – replace the hazard with a less hazardous tool, process, chemical, etc.

3. Isolation – isolate the hazard or those who could be harmed so that the hazard is not accessible.

4. Engineering Controls – provide an engineering solution to less the hazard (i.e., ventilation).

5. Administrative Controls – provide training, shorten exposure times, rotate staff, provide signage and warnings to reduce the hazard.

6. Personal Protective Equipment – this is the last resort. PPE is not the first line of defense unless all other controls are not practical or feasible.

B. To control illnesses caused by breathing contaminated air, the primary objective is to eliminate, substitute, or use isolation controls. If such controls are not feasible, use engineering controls (enclosure, confined, exhaust ventilation). When engineering controls are not feasible or while they are being instituted, appropriate respirators shall be used.

V. Hazard Evaluation

A. OC San will identify and evaluate the respiratory hazard(s) in the workplace. This evaluation will be conducted in accordance with the OC San Industrial Hygiene Program for qualitative assessments. The evaluation will include a reasonable estimate of the employee exposure to respirator hazard(s) and an identification of the contaminant.

B. In some cases, OC San will use air monitoring to determine employee exposure to the respiratory hazards identified. The type of monitoring and frequency of monitoring will be identified on a sampling plan as part of the Industrial Hygiene Program. At times, other methods to estimate workplace exposures may be used. These methods include, but are not limited to, objective data, application of mathematical approaches, or other methods acceptable to OSHA. When using these methods, the data needs to be accurate and representative of conditions at the worksite.

C. Employees wearing respirators will be monitored during work to ensure employees are not enduring undue stress or difficulty of any kind while wearing the respirator and to ensure the respirator provides adequate protection.

D. The hazards evaluations and respirator selections are documented and maintained by Risk Management and are available for review by Sanitation District employees upon request.

E. OC San will update the hazard assessment as needed when any of the following occurs:

1. Work process changes potentially affecting exposure, and

2. If an employee feels that respiratory protection is needed during a particular job task.

VI. Respiratory Selection

A. General

1. If engineering and administrative controls are not able to adequately reduce exposure, employees who are exposed or potentially exposed to a respiratory hazard at or above the applicable exposure limit will be provided with an appropriate respirator. Respirators will be selected as follows:

   a. All respirators must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification.

b. Only respirators selected, supplied, and approved by OC San may be used.

c. The maximum use concentration (MUC) shall be evaluated for proper respirator selection. The MUC is calculated by multiplying the assigned protection factor (APF) rating by the occupational exposure limit. If the concentration of the contaminant exceeds the MUC, then another respirator with a higher APF needs to be selected.

B. Air-Purifying Respirators

1. Air-purifying respirators (APR) come in half-face and full-face deigns, with full-face providing a greater level of protection.

2. Respirator cartridge selection must be based on anticipated hazards.

3. APRs do not supply oxygen and may not be used in oxygen-deficient atmospheres or ones that are immediately dangerous to life and health (IDLH).

4. Nature of air contaminants, irritant properties, exposure limits, duration of usage, work activities, and odor characteristics shall be considered when selecting this respirator.

C. Supplied Air Respirators (SARs)

1. This section includes both airline respirators and self-contained breathing apparatus (SCBA).

2. These respirators are designed to provide breathable air from a clean air source other than the surrounding contaminated work atmosphere. These respirators are used when working in an oxygen-deficient atmosphere, IDLH atmosphere, in a live sewer, or other as assigned.

3. Breathing air couplings must not be compatible with outlets for non-respirable worksite air (plant air) or other gas systems. Compressed and liquid oxygen will meet U.S. Pharmacopoeia requirements.

4. Compressed breathing air will meet at least the requirements for Grade D breathing air described in ANSI G-7.1, including

   a. 19.5-23.5% oxygen content

   b. Hydrocarbon content of 5 milligrams per cubic meter of air or less

   c. Carbon monoxide content of 10 ppm or less

   d. Carbon dioxide content of 1,000 ppm or less

   e. Lack of noticeable odor

5. Breathing air cylinders must have certificate of analysis from the supplier that the breathing air meets the requirements for Grade D air. Cylinders must be hydrostatically tested by a qualified organization. Steel tanks every 5 years and composite every 3 years. Cylinders need to be re-charged at 90% of manufacturer’s

recommended pressure level, regulators and warning devices function properly. Breathing air cylinders must be marked with NIOSH certification, 42 CFR Part 84.

6. Employee using SARs must have additional hands-on training that covers use, care, and limitations of the equipment.

7. Airlines used in compressor or cascade cylinder systems shall be used only for breathing air and no other gas or liquid. Maximum length of line is 300 feet. Lines shall be inspected daily for damage and contamination. Where airlines are used, all users shall be equipped with a suitable escape respirator.

8. Compressors used to supply breathing air must be constructed and situated to provide the following
   a. Prevent contaminated air from entering the system.
   b. Have inline filter to ensure breathing air quality. Filter to be replaced per manufacturer's instructions.
   c. Display a tag with most recent filter change-out date and signature of individual who performed the maintenance.
   d. Have a carbon monoxide alarm to monitor CO levels (<10 ppm).

D. Respirator Cartridges/Filters

1. Respirator filters come in three classes – N, R, and P:
   a. N series filters: not resistant to oil particles
   b. R series filters – resistant to oil particles
   c. P series filters – oil proof (used where oil particles are present for more than 8 hours).

2. Respirators filters come in three efficiency ratings – 95, 99, 99.97. The higher the rating, the lower the infiltration.

3. All filters, cartridges, and canisters shall be labeled with the appropriate NIOSH approval label. The label shall not be removed or defaced while the respirator is in use.

4. End of Service Life
   a. Cartridges have an end of service life that needs to be considered when selecting the cartridge. Use of warning properties, such as odor and taste, are not permissible practices. Some cartridges are equipment with an end of service life indicator (ESLI).
   b. If the cartridge selected have an ESLI, cartridges shall be changed based upon the indicator or if the cartridge becomes damaged, defective, dirty, or if increased breathing is observed, whichever occurs first
   c. If cartridges are not equipped with an ESLI, employees shall change out the cartridge after each use or if breathing becomes difficult, whichever comes first.

E. Respirators are required when performing activities within or at the following locations:

1. Paint booth, and

2. Confined space entry into a live sewer system, and

3. Confined space entry into a space with a potential for immediately dangerous to life and health (IDLH) atmosphere, including oxygen-deficiency, oxygen-enrichment, and flammable atmospheres, and

4. Acid washing scrubbers and other tanks using portable chemical totes and pumping systems, and

5. During confined space entry rescue operations, and

6. Welding and cutting operations when use of local exhaust ventilation systems is not feasible.

F. Types of Respirators and Filters/Cartridges Supplied

Respirator	Type	Cartridges/Filters	Potential Use
Filtering Facepiece Respirator (dust or particulate mask)	Half-face	N95	Dust, particulates, wildfire smoke
Air-Purifying Respirator	Half-face Full-face	Organic Vapor Acid Gas N-95 P-100	Wastewater misting, asbestos, lead, chromium, metals, acids, formaldehyde
Powered Air-Purifying Respirator	Full-face	P-100	Chromium, metals
Supplied-Air Respirator (SAR) or Airline	Full-face	N/A	Hydrogen sulfide, low oxygen environment
Self-Contained Breathing Apparatus	Full-face	N/A	Hydrogen sulfide, low oxygen environment

VII. Medical Evaluation

A. All employees required or voluntarily wearing a respirator must pass a medical exam provided by a third-party physician or licensed health care professional (PLHCP) prior to using a respirator.

B. The PLHCP will perform an evaluation using the medical questionnaire as defined in Title 8, California Code of Regulations, Section 5144 Appendix C, or an equivalent medical examination. The medical questionnaire and examination shall be administered confidentially during the employee's normal working hours. The medical evaluation shall be at no cost to the employee.

C. Employees shall receive follow up medical examination(s) that include any medical tests, consultations, or diagnostic procedures to ensure medical clearance, and if the following conditions apply:

1. Reports of any medical signs or symptoms that are related to ability to use a respirator.

2. A PLHCP or the supervisor informs the Sanitation District that an employee needs to be reevaluated.

3. A change occurs in the workplace conditions that may result in a substantial increase in the physiological burden on an employee.

D. An employee who responds positively to any question in the medical questionnaire, at the discretion of the PLHCP, may be required to undergo a follow-up medical evaluation, including any medical tests or diagnostic procedures that the physician deems necessary to make a final determination. OC San shall receive a written recommendation from the PLHCP specifically qualifying each respective employee for respirator use. The recommendation must include the following information:

1. Any limitation on respirator use, including whether the employee is medically able to use a respirator.

2. The need for follow-up medical evaluation (if any).

3. A statement that the physician has provided the employee with a copy of his/her recommendation.

4. Employees who are not approved for respirator use by the PLHCP will be prohibited from performing work that requires the use of a respirator (including the fit test).

5. Employees who are not approved for a specific respirator due to medical conditions will be provided with a powered air-purifying respirator (PAPR) if the physician indicates that the employee can wear such a respirator.

E. Medical evaluations will take place according to the following schedule:

1. Annually prior to fit testing and respirator use in the workplace.

2. When an employee reports medical signs or symptoms that may be related to respirator use.

3. When a change occurs in the workplace that results in substantial increase in the physiological burden place on the employee (e.g., physical work effort, protective clothing, temperature).

4. Re-evaluation should be conducted when the PLHCP, supervisor or program administrator informs the employer that the employee needs to be re-evaluated (e.g., pregnancy, new health conditions, disease diagnosis etc.)

VIII. Fit Testing

A. Fit testing shall be conducted for any employee who is required to wear a respirator. The fit testing will be conducted in accordance with 8 CCR, Section 5144 Appendix A.

B. Employees shall receive an initial and/or annual medical examination prior to receiving fit testing.

C. Fit tests are conducted confidentially, during normal working hours, and at no cost to the employee. Fit testing is conducted by trained and authorized Risk Management staff or approved third-party vendors.

D. The fit test administrator will complete a fit test form and provide a copy to the employee upon completion of the fit test.

E. Each respirator that an employee may use is required to be fit tested. The fit testing will be conducted prior to respirator use and at least annually thereafter.

F. Fit testing will be conducted if an employee's physical condition changes resulting in the potential for an inadequate fit.

G. Fit testing must be performed by trained and qualified individuals.

H. Employees are required to be fit tested with the same make, model, style, and size of the respirator that will be used.

I. Only those respirators that have been properly fitted may be worn.

J. Fit testing for tight-fitting respirators will be completed using quantitative fit testing methods. Qualitative fit testing will be completed for filtering-facepiece respirators. With approval from the Safety and Health Supervisor, qualitative fit testing can be performed for tight-fitting respirators. Qualitative fit testing cannot be performed for respirators with a fit factor of 100 and above. Quantitative fit testing will be completed using a TSI Porta-Count or similar device. Qualitative fit testing will be completed using an OSHA or NIOSH approved agent (i.e., isoamyl acetate, irritant smoke, saccharin, or Bittrex).

IX. Respirator Use

A. Only medically cleared, trained, and fit tested employees may use respirators.

B. Employees must wear and use all respirators in accordance with training, this program, and the manufacturer's instructions.

C. Employees shall use respiratory protective equipment in required designated areas.

D. Respirators will be assigned to a single employee for their exclusive use.

E. Corrective glasses or goggles shall be used in a manner that will not interfere with the seal of the facepiece.

F. Respirators must not be worn if there is any condition that prohibits a good face to face seal.

G. Employees are not permitted to wear a tight-fitting respirator with facial hair that comes between the sealing surface of the facepiece and the face, or facial hair that interferes

with valve function. Acceptable facial hair typically includes neatly trimmed mustaches or beards boarding only the mouth of the employee. All facial hair under the chin or cheeks is prohibited for respirator wearing use. That includes small, neat beards or goatees that fit within a respirator.

H. User seal checks must be performed each time the respirator is put on for tight fitting respirators.

I. Users must exit the work area if odors are detected, if breathing becomes difficult, or if the user detects physical symptoms (i.e., dizziness, nausea, blurred vision) from using a respirator.

J. Under IDLH conditions, at least one person will be located outside the IDLH atmosphere. In addition, visual, voice, or signal line communication shall be maintained between the person in the IDLH environment and the person outside the IDLH atmosphere. Persons outside the IDLH atmosphere shall be trained in rescue and use of SCBA, including equipment for emergency rescue.

X. Voluntary Respirator Use

A. Respirators will be provided by OC San at the request of an employee if the use of the respirator does not in itself create a hazard to the user. The respirator will be provided at no cost to the employee.

B. An employee who wishes to wear a respirator on a voluntary basis may do so only after:

   a. Receiving a medical screening evaluation.

   b. Completing training in the proper use and care of the respirator.

   c. Receiving fit testing prior to use.

C. A copy of 8 CCR Section 5144 Appendix D “Information for Employees Using Respirators When Not Required Under the Standard” will be provided to any employee who wears a respirator when it is not required.

XI. Maintenance, Care and Storage

A. Cleaning

1. Respirator shall be cleaned before and after each use to maintain sanitary condition.

2. Respirators used for fit testing shall be cleaned after each use.

3. Cleaning shall be performed in accordance with manufacturer recommendations.

B. Storage

1. All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moistures, chemicals, and deformation of the facepiece and exhalation valve.

2. Respirator storage bags are available in the warehouse.

3. Refer to manufacturer instructions for storage recommendations.

C. Maintenance

1. Respirators requiring maintenance due to worn or malfunctioning parts will be discarded and replaced.

2. Reducing and admission valves, regulators, and alarms shall be adjusted only by the manufacturer, or a technician trained by the manufacturer.

D. Inspection

1. All respirators will be inspected to per the following:
   a. Air-Purifying Respirators: inspected prior to each use and during cleaning.
   b. SCBAs: inspected prior to each used, during cleaning and monthly; inspection will include making sure that the regulator and warning devices function properly; SCBA air cylinder tanks shall be inspected every 3 months by a designated individual from the responsible division and hydrostatically tested every 5 years.
   c. Emergency Use Respirators: inspected monthly, before and after each use, and in accordance with manufacturer recommendations.
   d. Emergency Escape-Only Respirators: inspected before being take into the field.

2. Inspections shall be documented to include the following:
   a. Respirator function.
   b. Condition of regulator.
   c. Function of warning devices.
   d. Connections should be checked for damage and functionality.
   e. Facepiece rubber or elastic materials should be checked for excessive wear.
   f. Head straps should be checked for tears and elasticity.
   g. Valve flaps should be checked for proper alignment and movement.
   h. Connecting tube should be checked for damage and
   i. Cartridges, canisters, and filters should be checked for apparent condition and cleanliness.
   j. If air and oxygen cylinder are fully charged. Cylinders will be recharged when pressure falls to 90% of manufacturer’s recommended pressure level.

3. Defective and Failed Respirators
   a. All respirators that fail the inspection or are deemed defective shall be removed, replaced, or repaired. Until the respirator is removed, replaced or repair, a “DO NOT USE” tag shall be attached.

XII. Training

A. Training shall be provided to respirator users and their supervisors on the contents of the Respiratory Protection Program. OC San will accommodate training in languages other than English if needed.

B. The training course will cover the following topics:

1. OC San's Respiratory Protection Program.
2. Cal/OSHA's Respiratory Protection Requirements.
3. Respiratory hazards encountered at the workplace and their health effects.
4. Proper selection and use of respirators.
5. End of Service Life for cartridge.
6. Limitations and capabilities of respirators.
7. Respirator donning and user seal (fit) checks.
8. Fit testing.
9. Emergency use procedures.
10. Inspection, maintenance, and storage of respirators.
11. Medical signs and symptoms limiting the effective use of respirators.
12. Locations of where respirators are required.

C. Employees will be retrained annually or as needed (e.g., if they change departments or work processes and need to use a different respirator). Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill.

D. Employees must demonstrate their understanding of the topics covered in the training through hands-on exercises and a written test. Topics include donning and doffing respirators, the use of various kinds of respirators and associated filter pieces, limitations, and maintenance of respirators.

XIII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and

series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XIV. References

SOP-111, Medical Program

SOP-642, Industrial Hygiene Program

Title 8, California Code of Regulations, Subchapter 7, Group 16, Article 107, Section 5144 Respiratory Protection.

XV. Revision History

Version	Date	By	Reason
1.0	07/15/2002	Matte, James	New
2.0	07/08/2010	Vellucci, Cindy	Program Update
3.0	08/13/2020	Huynh, Brian Frattali, John	Periodic Update – Refer to Program Change Log
4.0	12/07/2021	Hachim, Sabrina	Annual Policy Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-110 (Ver. 4) Radiation Safety Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The Orange County Sanitation District (OC San) is committed to providing a safe and healthful work environment for all employees. Radiation Safety Program (RSP) is a critical element in the success of OC San's overall safety program. Compliance with this program and procedures is crucial to the safety of OC San employees and contractors. The importance of following the RSP must be understood by all employees charged with the responsibility of working with and around nuclear gauges and gas chromatographs containing radioactive material.

The OC San has developed the RSP in accordance with the California Occupational Safety and Health Administration (Cal OSHA) and the California Department of Public Health (CDPH), Radiological Health Branch regulations found in Title 17, California Code of Regulations (CCR), Division 1, Chapter 5, Subchapter 4, Radiation. This RSP applies to all OC San employees, contractor service representatives, and visitors who enter posted areas where radioactive materials are located. The application of the required practices and procedures to protect employees from exposure to radiation has also been included in this program.

The OC San maintains a zero-tolerance position for any OC San employee who fails to comply with this program. Disciplinary actions up to and including termination will be enforced on employees who willfully and knowingly disregard the safety requirements of this program.

II. Program Administration

This RSP shall be evaluated annually by the OC San Radiation Safety Officer (RSO), to ensure that it is effective in providing adequate protection from hazards associated with performing work activities near the nuclear gauges. This evaluation can be conducted concurrently with the annual audit discussed in Section IX. The RSO shall determine if regulations or national consensus standards have changed since the last annual program review and update the program if necessary. These include:

- California Department of Public Health, Radiologic Health Branch
- NRC Regulations
- Vega Americas General License Requirements

III. Definitions

As Low As Reasonability Achievable (ALARA): The safe work practices that keep exposures to ionizing radiation "as low as reasonably achievable" (ALARA) to minimize exposure to ionizing radiation while performing service or maintenance work on or near nuclear density

gauges and gas chromatographs, or in an emergency event such as a nuclear density gauge dislodgment.

Authorized User: Personnel who have been authorized by the CDPH Services Radiological Health Branch, an Agreement State, or the U.S. Nuclear Regulatory Commission (NRC) to perform nonroutine operations (e.g., gauge installation, maintenance, repair, disposal) and have adequate training and experience.

Controlled Area: An area outside a restricted area, but inside the site boundary, access to which can be limited by the licensee for any reason.

Curie: A unit used to measure the intensity of radioactivity or radiation producing

Gauge Users: Individuals (OC San employees and contractors) who use nuclear density gauges.

Radiation Safety Officer (RSO): An individual who is qualified by reason of training and experience to oversee the radiation safety aspects of radioactive material use in the institution.

Rad (radiation absorbed dose): the amount of energy / radiation absorbed per unit mass of material. An absorbed dose of 1 rad means that 1 gram of material absorbed 100 ergs of energy.

Radiation (ionizing radiation)**:** Gamma rays and X-rays; alpha and beta particles, high-speed electrons, neutrons, protons, and other nuclear particles; but not sound or radio waves, or visible, infrared, or ultraviolet light.

Radioactive Material: means any material which emits radiation spontaneously.

Rem (Roentgen equivalent man): a measurement of a person's biological risk of suffering health effects from an exposure to radiation.

Restricted Area: An area to which access is limited by the district for the purpose of protecting individuals against undue risk from exposure to radiation and radioactive materials.

Radiation Area: An area accessible to individuals in which radiation levels could result in an individual receiving a dose in excess of 5 millirems in 1 hour at distance of 1 foot from the radiation source or from any surface that the radiation penetrates.

High Radiation Area: An area accessible to personnel or a major part of their body in which radiation levels could result in an individual receiving a dose more than 100 millirems in 1 hour at a distance 1 foot from the radiation source or from any surface that the radiation penetrates.

IV. Responsibilities

A. Radiation Safety Officer

The duties and responsibilities of the RSO are to provide overall coordination of the RSP, including:

- Ensure that the requirements of CCR Title 17, Division 1, Chapter 5, Subchapter 4, Radiation, are implemented.

- Develop and provide Radiation Safety Awareness training classes for those employees who may be exposed to ionizing radiation emitted by nuclear density gauges. Training may be facilitated through Cornerstone, OC San's training management system.
- Where required, conduct leak tests for equipment containing radioactive materials and shutter mechanism tests on nuclear density gauges that require them every 6 months.
- Ensure the development and maintenance of up-to-date SOPs for Operations, Maintenance, and the Laboratory.
- Ensure proper posters and forms are posted in accordance with regulatory requirements.
- Assist in developing and maintaining up-to-date SOPs for gauge users and emergency operating procedures (EOPs).
- Review and audit Operations and Maintenance (Electrical and Instrumentation) work activities near the source holder to ensure compliance with the SOPs.
- Inspect general condition of the nuclear density gauge and pipe flange connections.
- Act as a liaison by assisting the authorized user(s) from the nuclear density gauge manufacturer.
- Coordinating the removal and relocation of Ohmart ES-3 and SR-1A nuclear density gauges.
- Providing shipping pallets and or containers, affixing the nuclear density gauges to shipping pallets and or containers, and providing temporary storage for nuclear density gauge(s) scheduled for disposal.
- Procure and maintain service contracts for the calibration and maintenance of radiation survey instruments.
- Establish and maintain secure storage facilities for sources not in service.
- Ensure that general license, source identification activity, and serial and model number plates are attached to the equipment as applicable.
- In coordination with the Safety and Health Supervisor, act as a liaison by assisting supervising representative from the California Department of Public Health, Radiological Health Branch when equipment containing radioactive materials is to be disposed of or relocated, when required.

V. Procedure

The OC San has two sources of radiation in use at the Plant One facility:

- Three sludge density gauges are located inside the pump rooms of Primary Sedimentation Basin (PSB) 1 – 5 pump rooms. Two density gauges are in PSB Pump Room 1-2 & 5, and one density gauge is in PSB Pump Room 3-4. The three sludge density gauges contain Cesium-137 gamma radiation sources ranging from 500 to 1500 millicuries.
- Two Nickel-63 beta radiation sources housed within one gas chromatograph machine located in the Laboratory. Each Nickel-63 source is 15 millicuries.

Annual radiation doses from these radiation sources are well below the allowable 5,000 millirem to a whole body per year set by the NRC.

To keep employee exposure to radioactive sources ALARA and maintain compliance with the US NRC and Cal OSHA, the OC San developed this RSP that contains general requirements to protect OC San employees who are gauge users. General requirements are as follows:

- OC San shall develop equipment specific standard operating procedures (SOPs) for all types of equipment that contain radioactive materials.
- OC San shall designate qualified personnel to assume the duties of RSO and Assistant RSO.
- OC San shall ensure that both the RSO and the Assistant RSO have enough knowledge to develop and maintain the RSP.
- OC San-owned radioactive materials (nuclear density gauges, smoke detectors and exit signs) cannot be abandoned, sold for scrap, or placed in trash bins.
- Only authorized companies or persons shall repair, maintain, install, or remove equipment containing radioactive materials.
- Any OC San-owned equipment containing radioactive materials slated for disposal shall be shipped only to authorized companies or persons to receive, store, and dispose of radioactive material.
- OC San employees shall immediately report to the RSO the loss, theft, or transfer of OC San-owned equipment that contains radioactive material, failure of, or damage to the shielding or the source containment.
- The RSO in consultation with the Safety and Health Supervisor shall notify the CDPH Radiological Health Branch of any loss, theft, unauthorized transfer of OC San-owned equipment containing radioactive material, failure of, or damage to the shielding or the source containment.
- If there is indication of failure of or damage to shielding or source containment, operation of equipment containing radioactive materials is prohibited.
- All labels on equipment containing radioactive materials shall be maintained on these devices in a legible condition; removal of these labels is prohibited.

VI. Posting, Labeling and Signage Requirements

CCR, Title 17 Section 30255 requires that certain documents, warning signs, and labels be posted in the work area to inform employees of their rights and to make them aware of the potential exposure to ionized radiation. The RSO shall ensure that the following documents are posted in a sufficient number of places to permit employees engaged in work under the licenses to review them on the way to or from any work location. The postings shall be replaced if damaged or altered.

- Conspicuously post a current copy of CDPH Form RH-2364 (Notice to Employees) in a sufficient number of places to permit individuals working in or frequenting any portion of a controlled area to observe a copy on the way to or from such area.
- Conspicuously post a current copy of CCR Title 17, Division 1, Chapter 5, Subchapter 4, Radiation, in the work areas where licensed radioactive materials are used. If posting of

the regulations is not practicable, a notice, which describes the document and states the location where it may be examined, shall be posted.

- SOPs and EOPs applicable to work with sources of radiation shall be posted in the work areas where licensed radioactive materials are used. If posting of the SOPs or EOPs is not practicable, a notice, which describes the document and states the location where it may be examined, shall be posted.
- A copy of applicable licenses for radioactive material. If posting of licenses is not practicable, a notice, which describes the document and states where it may be examined, shall be posted.
- Notice of Violations (NOV) involving radiological working conditions, or any order issued pursuant to CCR shall be posted within two working days after receipt of the documents from the California Department of Public Health; the OC San's response, if any, shall be posted within two working days after dispatch by the OSCD. Such documents shall remain posted for a minimum of five working days or until action correcting the violation has been completed, whichever is later.

The RSO shall ensure that "Caution Radioactive Materials" labels are attached to each nuclear density gauge.

- Employees are not to remove or deface labels.
- Employees are to report damaged or missing labels to the RSO when discovered.

The RSO shall ensure that areas are properly identified with the applicable signage listed below. Plant One areas where nuclear gauges are located are found in Attachment 1 Radioactive Material Inventory.

- Restricted Area
- Radiation Area
- High Radiation

VII. General License Requirements

This section presents the various requirements of the nuclear density gauges permitted under a general license. The OC San operates nuclear density gauges under a General License issued by the California Department of Public Health, Radiological Health Branch per 17 CCR 30192.1. OC San must comply with the requirements of the CCR Title 17 Division 1, Chapter 5, and Subchapter 4, Radiation. OC San shall ensure that the following general requirements are met:

- OC San-owned nuclear density gauges cannot be abandoned, sold for scrap, or placed in trash bins.
- Only authorized companies or persons shall remove nuclear density gauges.
- Any OC San-owned nuclear density gauge slated for disposal shall be shipped only to authorize companies or persons to receive, store, and dispose of radioactive material.
- Under the supervision of an authorized user, OC San maintenance employees may remove or install a nuclear density gauge provided that the ON-OFF mechanism (shutter) is locked and tagged out in the OFF position.

- Only authorized users shall perform any dismantling, repairing, and testing involving a nuclear density gauge's radioactive material, its containment, or shielding.
- Newly installed nuclear density gauges shall be tested for radioactive leakage and the proper functioning of the ON OFF mechanism (shutter) by authorized users.
- OC San employees shall report immediately to the RSO the loss, theft, or transfer of district-owned nuclear density gauges, failure of, or damage to the shielding or the source containment.
- The RSO, in consultation with the Safety and Health Supervisor, shall notify the California Department of Public Health Radiological Health Branch of any loss, theft, unauthorized transfer of district-owned nuclear density gauges, failure of, or damage to the shielding or the source containment.
- If there is indication of failure of or damage to shielding or source containment, operation of nuclear density gauges is prohibited.
- Nuclear density gauge General License labels shall be maintained on these devices in a legible condition; removal of these labels is prohibited.

VIII. Training Requirements

Annual training is required for gauge users who work in or frequent any portion of a controlled or restricted area where the storage, transfer, or use of radioactive materials occurs. OC San personnel who are required to receive Radiation Safety training are:

- Instrumentation and Electrical (Division 870)
- Plant Mechanical Maintenance (Division 870)
- Plant Operations (Division 830)
- Plant Facilities Maintenance (Division 870)
- All contractors who work on or near nuclear density gauges must show proof of training prior to working with these gauges.

Specific training topics to be covered in the training are:

- Components and operation of Ohmart Nuclear Density Gauges.
- Purposes and functions of Ohmart Nuclear Density Gauges protective devices.
- Types of radioactive sources within the OC San facilities.
- Location of Radioactive sources within the OC San facilities.
- Cal OSHA, CDPH Title 17 and Vega Americas General License Requirements.
- Amounts of radiation exposure allowed by the U.S. NRC regulation.
- Potential amount of exposure received by district personnel.
- Personnel monitoring.
- ALARA principles of radiation safety awareness.
- Posting, signage, and labeling requirements.

- Training requirements.
- Recordkeeping requirements.
- Operating procedures.
- Emergency procedures.

IX. Program Audit Requirements

The RSP shall be audited annually and documented using the Radiation Program Audit Form. The audit form is an available questionnaire located in Cority, OC San's incident management software system. All items identified in the audit shall be corrected as soon as possible and no longer than 90 days from the finding. Audit findings shall be reported to the Safety and Health Supervisor and the RSO.

X. Limitations on User Activities and Required Procedures

Per the Vega Americas General License Requirements, OC San gauge users are limited in the scope of activities that may be performed on density gauges. The following cannot be performed by OSCD gauge users and can only be performed by an authorized Specific Licensee (e.g., an authorized user from the Vega Americas).

- Preparation for removal and installation of nuclear density gauges
- Unlocking the shutter and turning it ON.
- Testing proper operation of the shutter and shutter position indicator.
- Making the initial radiation field intensity survey.
- Performing initial testing for leakage of radioactive material.
- Removing the device from its mounding.
- Removal and installation of nuclear density gauges.
- Dismantling the device.
- Transporting nuclear gauges from storage to installation site and vice versa.
- Packaging nuclear gauges in preparation for shipping to disposal site. Packaging also includes application of required DOT labeling.

Maintenance activities that can be performed by OSCD gauge users are:

- De-energize, disconnect, or reconnect electrical wiring to the density detectors during the removal and installation of Ohmart ES-3 and SR-1A nuclear density gauges.
- Perform calibration checks and adjustments on Ohmart ES-3 and SR-1A nuclear density gauge detectors
- Perform preventive maintenance on connected piping and gauge sludge flow bypass and isolation valuing.
- Apply paint to Ohmart ES-3 and SR-1A nuclear density gauges.

The following Laboratory activities that can be performed without supervision of a specific licensed representative are:

- Start up and shut down of gas chromatographs.
- Installation and removal of Varian and Shimadzu gauges.

XI. Occupational Dose

An occupational dose is the dose received by an individual in the course of employment in which the individual's assigned duties involved exposure to radiation or radioactive material from a licensed source.

OC San employees who work with or on nuclear density gauges are gauge users.

The maximum total effective dose allowed for a gauge user under the US NRC and the California Dept of Radiological Health regulations is 5,000 millirem or 5 rem per year excluding exposure to background radiation and from medical procedures.

OC San shall provide reports to any individual of their radiation exposure data and the results of any measurements, analyses, and calculations of radioactive material deposited or retained in the body of that individual as specified in Title 17 California Code of Regulations Section 30255. The information reported shall include data and results obtained pursuant to Department regulations, orders, or license conditions, as shown in records maintained by the user pursuant to California Department of Public Health regulations. Each notification and report shall: be in writing; include appropriate identifying data such as the name of the user, the name of the individual, the individual's Social Security number; include the individual's exposure information; and contain the following statement:

This report is furnished to you under the provisions of the California State Department of Public Health Regulations: Standards for Protection Against Radiation. You should preserve this report for future reference."

These reports shall be provided as follows:

(A) Each user shall advise each worker annually of the worker's dose as shown in records maintained by the user pursuant to title 10, Code of Federal Regulations, part 20, (10 CFR 20), section 20.2106 as incorporated by reference in section 30253. The user shall provide an annual report to each monitored individual pursuant to section 20.1502, incorporated by reference in section 30253, of the dose received in that monitoring year if:

1. The individual's occupational dose exceeds 100 mrem total effective dose equivalent or 100 mrem to any individual organ or tissue; or

2. The individual requests his or her annual dose report.

(B) At the request of a worker formerly engaged in work controlled by the user, the user shall furnish to the worker a report of the worker's exposure to radiation or radioactive material as shown in records maintained by the user pursuant to 10 CFR 20, section 20.2106 that has been incorporated by reference in section 30253, for each year the worker was required to be monitored pursuant to section 20.1502 and for each year the worker was required to be monitored under the monitoring requirements in effect prior to March 3, 1994. Such report shall be furnished within 30 days from the time the request is made, or within 30 days after the exposure of the individual has been determined by the user, whichever is later. This report shall cover the period that the worker's activities involved exposure to radiation from radioactive

material licensed by, or radiation machines registered with, the Department and shall include the dates and locations of work under the license or registration in which the worker participated during this period.

(C) When a user is required pursuant to 10 CFR 20, sections 20.2202, 20.2203, or 20.2204, as incorporated by reference in section 30253, to report to the Department any exposure of an individual to radiation or radioactive material, the user shall also provide the individual a report on his exposure data included therein. Such reports shall be transmitted at a time not later than the transmittal to the Department.

(D) At the request of a worker who is terminating employment with the user that involved exposure to radiation or radioactive materials, during the current calendar quarter or the current year, each user shall provide at termination to each worker, or to the worker's designee, a written report regarding the radiation dose received by that worker from operations of the user during the current year or fraction thereof. If the most recent individual monitoring results are not available at that time, a written estimate of the dose must be provided together with a clear indication that this is an estimate.

The OC San Risk Management Division goal is to keep employee exposures below the maximum allowed for the public which is 100 millirem per year excluding exposure to background radiation and from medical procedures.

Ohmart ES-3 and SR-1A nuclear gauge density detectors are equipped with a Cesium-137 radioactive sources what have an activity of 500 to 1,500 millicuries (mCi) or 0.5 to 1.5 Curies (Ci). Cesium-137 emits gamma radiation. For this reason, the ES-3 and SR-1A nuclear gauges are equipped with lead and steel shielding. The shielding reduces the amount radiation being emitted from the gauge down to a field of less than 5 millirem per hour at one foot from the gauge.

OC San will use the ALARA principle to protect and minimize its gauge users and employees from exposure to gamma radiation emitted by Cesium-137. ALARA can be achieved by training OC San gauge users how to minimize their exposure to gamma radiation using time, distance, and shielding. OC San Gauge users can minimize their exposure to radiation by doing the following:

- Pre-plan their work activities.
- Set up and stage tools, meters, and other maintenance equipment a minimum 3 feet from the gauge.
- Close the shutter on the SR-1A nuclear gauge to protect the gauge user from the radiation beam when replacing electronics or calibrating the detectors.
- For ES-3 gauges which are not manufactured with a shutter; insert a metal blocking device into the gap between the source holders and detector, to perform the same function as a shutter and protect the gauge user from the radiation beam when replacing electronics or calibrating the detectors.
- Leave the area after the maintenance or calibration work is completed.

A. Prenatal Exposure

NRC regulation 10 CFR 19.12 Instruction to Workers requires instruction in the health protection problems associated with exposure to radiation and/or radioactive material, including to an embryo/fetus (NRC Regulatory Guide 8.13).

Women, whose job requires them to work around sludge density gauges, are not required by law to notify their supervisors that they are pregnant. However, the OC San Safety and Health Division recommend that they do so.

If a pregnant woman decides to declare her pregnancy, she will be required to fill out a Declaration of Pregnancy form. This form can be retrieved from the OC San RSO. Once the form has been signed by the employee declaring pregnancy, it will be the responsibility of the OC San Risk Management Division and her immediate supervisor to ensure that the radiation dose to an embryo or fetus during the entire pregnancy does not exceed 0.5 rem or 500 millirem.

To accomplish this, the employee's work assignment will be modified to restrict her from performing work in process areas where nuclear devices are located, primarily inside Plant One PSB 1, 2, and 5 pump room and PSB 3-4 pump room. The work restriction shall remain in effect until she withdraws the Declaration of Pregnancy in writing. If the Declaration of Pregnancy is not withdrawn, then the written declaration may be considered expired one year after submission.

B. Radiation Safety Officer

The occupational exposure for the RSO is estimated the gauge survey and leak test. Annual radiation dose is estimated as follows:

- The time spent near the nuclear gauges is approximately 10 minutes per gauge x 3 nuclear gauges at Plant One = 30 minutes of total time.
- The radiation field at one foot from the density gauge is 5 mR per hour.
- 30 minutes = 0.5 hours x 5 mR/hour = 2.5 mR, Wipe test are conducted every six months or twice per year 2 x 2.5 mR = 5.0 millirem per year.
- The RSO also performs a leak test on the two Nickel-63 sources located in the laboratory gas chromatograph. The activity of each Nickel-63 source is 15 mCi. Nickel-63 is a low-energy beta emitter and not an external exposure hazard, as discussed below.

C. Laboratory Personnel

Laboratory personnel who work with gas chromatographs may be exposed to beta radiation emitted from a Nickel 63 isotope. Unlike gamma radiation, beta radiation requires minimal shielding to protect the user from radiation exposure. Because the Electron Capture Detector (ECD) Nickel 63-sources are housed inside the gas chromatographs which shield the beta radiation, the risk of radiation exposure is minimal, less than 2 millirem per year. The OC San RSP requires the following practices when handling ECD devices.

- OC San laboratory personnel who handle ECD devices shall use either disposable light cotton or latex gloves when handling the detectors.
- Thoroughly wash your hands after handling ECD devices.

D. Instrumentation Technicians

Calibration of OC San nuclear density gauges is assigned to Instrumentation personnel; this activity involves both working within one foot or less from the source holder. The annual radiation dose that a Plant One Instrumentation Technician may receive was estimated based on records of preventative maintenance and annual calibration records:

- The average time per year that a Plant One Instrumentation Technician spends at one foot or less from nuclear gauges is 12 hours. The radiation exposure rate at one foot or less from the nuclear density gauge is 5 millirem per hour.
- The estimated annual radiation dose is 12 hours x 5 mR per hour, or 60 millirem per year.
- ES-3 Ohmart density gauges are not equipped with a shutter, it is imperative that the Instrumentation Technician verify that metal blocking device is inserted into the space between the source holder and detector when working on or replacing the electronics or circuit boards to the detector. Failure to install the radiation beam blocking device will result in the Instrumentation Technician receiving a much higher dose of radiation.

E. Plant Operators

Plant Operators who are assigned to complete rounds inside Plant One PSB 1, 2 & 5 pump room and PSM 3-4 pump room are required to pump scum once per shift. This work requires the operator to complete density gauge bypass set ups on the Primary Basins sludge transfer line. This may require the operator to stand in an area that is approximately one foot distance from the nuclear gauge. Bypass setup takes approximately 2 minutes to complete. The annual radiation dose rate for a Plant One Operator was calculated using the following information.

- Source holder radiation activity, distance of one foot 5 mR per hour.
- Total number of operational density gauges located at Plant One is 3.
- Total time spent by an Operator at one foot from the source holder while performing the valuing set up is approximately 5 minutes.
- Frequency or estimated amount of times that a Plant One Operator will be assigned to the primary basin area is 4 shifts per month or 48 shifts per year.
- 48 shifts per year x 3 density gauges per shift x 5 minutes valuing set up = 720 minutes per year, or 12 hours per year
- 12 hours x 5 mR = 60 millirem per year

F. Contractors and Service Providers

It will be the responsibility of the OC San RSO to ensure that radiation exposures to Contractor and Service Providers are kept below the dose limit for a member of the public of 100 millirem per year or 2 millirem per hour, excluding exposure to background radiation and from medical procedures.

This goal can be accomplished by informing Contractors and Service Providers of the following:

- The locations within the Plant One process facility where radioactive materials are kept and used.
- General License safety rules, ALARA practices, and EOPs.

General license safety rules shall be strictly adhered to, failure to comply will result in contractor of service provider personnel being denied access into the process area where the nuclear gauges are located. At no time will contractors and service providers be allowed to do the following:

- Removal or modification of existing labels or signs that are affixed to the nuclear gauge.
- Removal of locks, lockout and tagout devices applied the nuclear gauge or associated pipe or drain valves.
- Dismantling and or removal of electrical components associated with OC San owned nuclear gauges.
- Dismantling any piping that supports the nuclear gauge.
- Performing hot work activities, less than two feet from an OC San owned nuclear gauge.

Additionally, the following are required:

- Removal, relocation, or reinstallation of an OC San owned nuclear gauge shall be done under the supervision of both the OC San RSO and an authorized Specific Licensee (e.g., an authorized user from the Vega Americas).
- Transport of an OC San owned nuclear gauge form its original location to a temporary storage area shall be done under the supervision of both the OC San RSO and an authorized Specific Licensee (e.g., an authorized user from the Vega Americas).
- Calibration and maintenance work on OC San owned nuclear gauges can only be done by trained OC San instrumentation technicians.
- Contractor and Service providers must contact the OC San RSO prior to bring any radioactive devices on to OC San property.
- Contractors and Service providers shall also inform the OC San RSO of the dates and locations of where these device(s) are to be used within the OC San Facilities.
- Contractors and Services Providers shall provide a list of contact personnel who will be both operating the devices that contain radioactive material and those responsible for the security of these devices.
- Contractor and Service Providers shall post the appropriate warning signs and barricade the area where radioactive material is used.
- Contractor and Services Providers will not be allowed to store nuclear devices on OC San property. All radioactive materials shall be removed from OC San property at the end of each workday.

XII. Emergency Procedures

Steps to be taken in the event of a gauge theft, damage to the source holder that has occurred due to dislodgment (fall), collision, fire, explosion, are covered in this section.

The Cesium-137 sources that are used in the density gauges emit gamma radiation. Provided the source holder's steel outer shell and the lead (shielding) remains intact, the radiation exposure and dose are less than 5 mR per hour at one foot from the source holder. If the gauge becomes dislodged due to a fire or explosion, it is highly likely that the source holder shielding will be damaged. However, damaged shielding will substantially increase the radiation exposure rate around the gauge. The radiation exposure rate of an unshielded 1,500 mCi source of Cs-137 is approximately 5,400 mR per hour at one foot. Employees or contractors who are unaware of the potential hazard could receive a radiation dose that exceeds the maximum annual dose allowed for a gauge user of 5,000 millirem, if the gauge user stands a distance of one foot or less from the unshielded source for about an hour.

In all emergency procedures, priority is given to human safety. In doing so certain essential steps must be taken, these steps are divided into two types of responses: 1) the Initial Response and 2) the Secondary or RSO Response. It is the responsibility of a (trained) OC San employee who discovers emergency situations to initiate the Initial Response.

A. Secondary Response will be the responsibility of the RSO, including:

- Contain the radioactive materials at the site of the emergency by denying access to unauthorized personnel.
- Shut down area ventilation fans and air conditioning (if applicable).
- Limit access to the scene of the incident and areas exceeding 2 mR/hr. Where the radiation levels are 2 mR/hour, post radiation hazard signs and limit access by using rope, barricades, or similar.
- Notify the appropriate authorities promptly, including the local fire department, California Department of Public Health Radiological Health Branch, and the Vega Americas RSO. Seek their immediate advice on additional steps or precautions that need to be taken.
- Arrange for immediate arrival of experts who are trained and authorized to deal with such accidental conditions.
- Maintain complete records of the accident and follow-up procedures.

B. Source Holder Lost or Theft

The employee who discovers a missing source holder shall notify the RSO immediately. The RSO shall immediately notify the California Department of Health Radiological Health Branch and organize the search for the source-holder or the source capsule. To initiate the search the RSO shall complete the following:

- Use a survey meter on the lowest scale during the search.
- Look for any unusual radiation readings that are higher than background readings.
- Check places where the source could be hidden from view.
- Look through trash dumpsters, scrap bins, dumping areas, bone yards, Warehouse, and trucks.
- Check with contractors working in the areas, if any.

If the missing source holder or source capsule is found, the following shall be implemented:

- Evacuate the immediate area.
- Regulate entry to the location where the gauge or source capsule was found.
- Where the radiation levels are 2 mR/hour, post radiation hazard signs and limit access by using rope, barricades, or similar.
- Notify the appropriate authorities promptly.
- Arrange for the immediate arrival of experts who are trained and authorized to deal with these situations.
- Collect and maintain complete records of the incident and follow-up procedures.

C. Damaged Source Holder

An employee who discovers a damaged source holder shall complete the following:

- Notify the RSO immediately.
- Evacuate all personnel from the immediate area.
- Cordon off and deny access into the area.
- Notify other employees in the immediate area of the hazard.
- Help the RSO identify all persons or employees who were in the area and or involved in the accident that dislodged and or damaged the gauge.

The RSO shall conduct radiation measurements around the source-holder; the exposure rate should be less than 5 mR/hour at one foot from the gauge. If the exposure rate is 5 mR/hour or less, the shielding around the source is probably not damaged.

If the exposure rate around the source holder is 5 mR/hour or less at one foot, RSO shall the perform the following:

- Without moving the gauge, complete a visual check of the source-holder, check for dents, cracks, and splits welded seams.
- Ensure that the shutter on or off mechanism is functioning properly. If it is and the source holder is equipped with a shutter, lock the shutter in the off position. Older Ohmart ES-3 Gauges do not have a shutter.
- Make sure that the radiation beam is pointed away from any entry exit points or other areas where personnel may be exposed to the beam. On ES-3 gauges, block the opening with shielding material.
- Check for possible radioactive material leakage by performing a wipe test on the gauge.

If the exposure rate around the source holder exceeds 5 mR/hour at one foot or it appears that the source-holder steel outer casing or lead shielding has been damaged, the RSO shall:

- Limit access to the area. Where the radiation levels are 2 mR/hour, post radiation hazard signs and limit access by using rope, barricades, or similar.
- Obtain names of individuals who may have been exposed to higher than normal levels of radiation. Immediately notify the California Department of Public Health Radiological Health Branch and inform them of the situation.

- For your records, write down the name of the person at the agency you spoke with.
- Contact the gauge manufacturer and arrange for the safe removal, packaging, and shipment of the source holder.
- Maintain complete records of the accident and follow-up procedures.

D. Fire

In the event of a fire in the area where a nuclear gauge is located, the first responder shall complete the following:

- Call the 2222 emergency telephone number and alert the Control Center Operator to call out the fire department.
- Cordon off and deny access into the area until the fire department arrives.
- Notify the RSO immediately.
- Request that an employee be sent to the front gate to escort the fire department to the location of the fire.
- The RSO will inform fire-fighting personnel that a radioactive device is in the area.
- Establish and maintain a radiation safety perimeter or zone, by conducting a radiation survey of the affected area. Where the radiation levels are 2 mR/hour, post radiation hazard signs and limit access by using rope, barricades, or similar.
- Note names of OC San personnel who were in the affected area when the fire was discovered. Estimate the length of exposure and radiation dose received by these individuals.
- Immediately notify the California Department of Public Health Radiological Health Branch.
- Contact the gauge manufacturer and arrange for the immediate arrival of experts who are trained and authorized to deal with such accidental conditions.
- Assist the experts in the safe removal, packaging, and shipment or disposal of the damaged source holder.
- Maintain complete records of the accident and follow-up procedures.

E. Source Holder Stuck Shutter

An employee who discovers a stuck shutter must stop work, leave the gauge in place, and immediately notify the RSO. The RSO must perform the following:

- Leave the gauge in place.
- Place do not operate tag on shutter mechanism and attach a lock.
- Contact Vega Americas for advice. They will advise whether the gauge should be shipped back to them or if a field engineer should be sent out from Vega Americas to repair it.
- Notify the California Department of Public Health Radiological Health Branch within a 24-hour period and submit a written follow-up report within 30 days.

XIII. Emergency Equipment

The RSO is responsible for having the necessary emergency equipment on-hand for a potential emergency involving a nuclear gauge. A list of emergency equipment is provided below:

- List of emergency procedures and phone numbers.
- Survey meter.
- Leak test kits.
- Danger tape, rope, or similar (to isolate the area)
- Radiation hazard signs (to identify the area)
- Batteries for survey meters.
- Tape measure.
- Gloves.
- Shielded containers.

XIV. Recordkeeping

Federal and state regulations require that specific records be kept on file for each nuclear device on site. Requirements for all these records are as follows:

- The records may be an original or a reproduction copy.
- Records such as letters, drawings, and specifications shall include all pertinent information such as letters, stamps, initials, and signatures.
- Adequate measures shall be implemented to safeguard records from being tampered with or lost.

Required Records that must be maintain for a period not less than 3 years are:

- Nuclear density gauge calibration maintenance records.
- Leak test records.
- Radiation survey meter calibration records.
- Employee training records.

Notification letters sent to the California Department of Public Health Radiological Health Branch related to:

- Receipt, installation, relocation, and disposal of nuclear density gauges.
- Incidents such as damage to or malfunction of fixed nuclear density gauges, fire loss, or theft.
- Possible exposure of an employee to a radiation level that exceeds the NRC maximum amount allowed for a gauge user.
- Transfer of ownership records when a nuclear density gauge is returned to the manufacturer for disposal.
- Shipping manifest completed by trucking company that transports the nuclear density gauge.
- Up-to-date inventory of all on-site nuclear density gauges.

All records created or generated in the course of this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XV. References

California Code of Regulations, Title 8 Section 5076, Administrative Procedure (Standards for Protection Against Radiation).

California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4, Radiation.

California Department of Public Health Form RH-2364 (Notice to Employees).

NRC Regulatory Guide 8.13. Instruction Concerning Prenatal Radiation Exposure. June 1999.

NUREG-1556 Volume 4. Consolidated Guidance About Materials Licenses. Program-Specific Guidance About Fixed Gauge Licenses. Revision 1. July 2016.

Vega Americas General License Requirements.

XVI. Revision History

Version	Date	By	Reason
0	06/26/2003	Patrick Carnahan	
1	01/05/2011	Patrick Carnahan	
2	04/16/2019	Alison Wilding, CIH (Arcadis)	Program update
3	08/20/2020	John Frattali	Periodic Update – Refer to Program Change Log
4	12/07/2021	Brian Huynh	Annual Program Review – Refer to Program Change Log

XVII. Attachments

Attachment 1. Radioactive Materials Inventory

Attachment 1
RADIOACTIVE MATERIALS INVENTORY

PLANT NO 1 PRIMARY SEDIMENTATION BASIN (PSB) PROCESS AREAS:

LOCATION	MNFCTR*	MODEL	ISOTOPE	ACTIVITY	S/N
PSB 1&2	Ohmart	SR-1A	Cs-137	500 mCi	48186
PSB 3&4	Ohmart	ES-3	Cs-137	1500 mCi	68074
PSB 5	Ohmart	ES-3	Cs-137	1200 mCi	70625

ORANGE COUNTY SANITATION DISTRICT	SOP-111 (Ver. 5) Medical Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

This overview of the Medical Program is applicable to Orange County Sanitation District (OC San) facilities and other locations where OC San employees are performing work. This procedure describes the medical program features. Topics include pre-employment physical examination, occupational injury and illness management, provisions for performing and providing first aid, emergency medical procedures, and medical surveillance programs.

The Medical Program is designed to meet Cal/OSHA requirements for medical monitoring, first aid/AED/CPR, injury treatment, return to work evaluation, emergency services, wellness programs, and recordkeeping.

II. Definitions/Acronyms

Automatic External Defibrillator (AED) – A portable electronic device that automatically diagnoses the potentially life threatening cardiac arrythmias of ventricular fibrillation and ventricular tachycardia in a patient, and can treat them through defibrillation, the application of electrical therapy with stops arrhythmia, allowing the heart to reestablish an effective rhythm.

Bloodborne Pathogen (BBP) – Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).

Cardiopulmonary Resuscitation (CPR) – an emergency procedure that combines chest compressions often with artificial ventilation to manually preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in cardiac arrest. It is recommended in those who are unresponsive with no breathing or abnormal breathing, for example, agonal respirations.

Emergency Medical Services (EMS) – a type of emergency service dedicated to providing out-of-hospital acute medical care and/or transport to definitive care, to patients with illnesses and injuries which the patient, or the medical practitioner, believes constitutes a medical emergency. Emergency medical services may also be locally known as emergency squad, rescue squad, ambulance squad, ambulance service, or paramedics.

First Aid – Providing basic care for injuries and sudden illnesses until advanced medical care can be rendered.

Good Samaritan Law – Gives legal protection to people who in good faith, and not for compensation, provide emergency care to ill or injured persons. Good Samaritans are required to use common sense and a reasonable level of skill not to exceed their training in emergency situations.

Health Insurance Portability and Accountability Act (HIPAA) – national standards for protecting an individual's privacy of personal health information.

Medical Response Team (MRT) – group of OC San volunteers who have been trained in CPR, AED, First Aid and Oxygen Administration. There are two levels of team members; this is specific to training and certifications received. Qualifications for team leadership roles are determined by current team leaders and the Risk Management Division including an individual's interest to be a part of the leadership, and their medical emergency training and volunteer history.

Sudden Cardiac Arrest – results when the heart abruptly and, without warning, stops working, which prevents blood from being pumped to the rest of the body. Sudden cardiac arrest usually causes death if not treated within minutes. A cardiac arrest is different from a heart attack or myocardial infarction, where blood flow to the still-beating heart is interrupted. People with heart disease have a higher chance of having cardiac arrest, but SCAs occur in people who appear healthy and have no known heart disease or other risk factors. Research has demonstrated that educating and training in CPR/AED and immediate actions to take during an SCA improves the chance of survival.

Universal Precautions – An approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, HCV, and other blood borne pathogens.

III. Roles and Responsibilities

A. Risk Management is responsible for:

1. Implementation and management of the various aspects and elements of the Medical Program.

2. Communication as needed with all department heads and supervisors regarding the implementation of this program.

3. Assisting management in implementation of the various aspects and program requirements described in this and related procedures.

4. Processing and/or filing and maintaining of written information with attention to regulatory requirements and employee privacy issues.

5. Interaction with employees or other workers as needed to ensure that they have access to the various provisions of the Medical Program.

6. Coordination with third-party medical service providers and worker's compensation representatives and third-party administrators.

7. Providing medical records and exposure monitoring reports related to potential exposure to, or monitoring of, toxic substances or harmful physical agents in the workplace.

B. Management/Supervisors are responsible for:

1. Informing the Safety & Health Supervisor and/or Human Resources Manager when an employee or worker in their area of responsibility has been injured or needs medical evaluation.

2. Informing the Safety & Health Supervisor and Human Resources Manager of any questions or concerns expressed by employees regarding potential work-related medical issues, injuries, or illnesses.

3. Coordination with the Safety & Health Supervisor and Human Resources Manager for medical service provider appointments and collection/review of any subsequently issued forms, reports, or other documentation received from medical service providers. Examples include work restriction notifications, diagnoses from medical service providers, other written opinions, or correspondence. Such documentation and information shall be maintained confidential as required by OC San document control and retention policies.

4. Ensuring that employees and workers in their area of responsibility are aware of, and attend, any scheduled appointments for medical surveillance or medical treatment.

C. Security and Emergency Planning Specialist is responsible for:

1. Determining the Medical Response Team training needs.

2. Facilitate communication between the Medical Response Team.

3. Develop procedures for managing medical emergencies and unit operating rules.

4. Review Medical Response Team needs for equipment and requesting new equipment, as necessary.

5. During large scale emergencies, follow the Central Command System, and direction from the Central Commander.

6. Ensure duties as described in the Integrated Emergency Response Plan are observed.

7. Shall implement and oversee the use, care, inspection, and maintenance of automatic external defibrillator.

D. Employees and workers are responsible for:

1. Following all rules and instructions for injury and illness reporting.

2. Attending, in a timely manner, all appointments relative to occupational medical treatment or evaluation.

3. Providing paperwork from medical service providers to their supervisor or OC SAN Human Resources (HR) representative including written assessments, diagnoses of occupational medical conditions or injury assessments, treatment plans, prescription medications, and instructions for limited or restricted work. The HR representative will then notify the employee's supervisor of their employee's status.

4. Cooperating during incident investigations or follow-up relative to events in which they were involved or which they witnessed.

5. Informing supervision and/or the Safety & Health Supervisor and Human Resources Manager of any questions, concerns, or observations they have regarding injuries, illnesses, medical follow-up, or return to work issues.

E. Medical Response Team is responsible for:

1. Each member of the Medical Response Team (MRT) is expected to abide by the concept of Universal Precautions when exposed to body fluid and other potentially infectious materials. Refer to the Bloodborne Pathogens Program for further guidance.

2. The MRT is made up of volunteers, who, with the permission of their supervisor, have agreed to volunteer for at least three (3) years and attend all required trainings, exercises, and meetings. At the end of three (3) years the Team Member may volunteer for three (3) more years or for a shorter term, again with the approval of their immediate supervisor.

3. MRT volunteers are provided with the necessary tools and equipment, commensurate with their training; in addition, the volunteer must meet the following minimum physical requirements:
    a. Ability to carry a medical responder backpack up to 20 pounds.
    b. Can climb stairs and ladders.
    c. Work in a kneeling position.
    d. Use scissors and tweezers.
    e. The ability to read and write.
    f. Wear all required Personal Protective Equipment and comply with the Bloodborne Pathogens Program.

4. When providing medical care, MRT members will stay within their OC San authorized certification, scope of practice and follow the protocol mandated by Orange County Health Care Agency, as taught in their First Aid/CPR courses.

5. During a medical response that involves a personal medical issue, that is not work related, MRT volunteers must follow HIPAA guidelines to protect the individual's privacy. In the case of a work-related medical response, continue to protect the individual's privacy and only provide information to staff who have a need to know.

6. MRT members must attend required training and maintain their certifications, including Title 22 First Aid, and CPR/AED Training to remain qualified for continued membership on the team.

7. MRT members shall advise Risk Management of inability meet training requirements and arrange makeup attendance within the required time frame to maintain certification. (This may require offsite, individual training).
    a. Shall miss no more than one quarterly Medical Team meeting per year; missing two consecutive meetings without advance notice may be cause for

dismissal. The MRT Team Supervisor shall be notified in advance of any absences.

b. All issued medical equipment shall be returned to Risk Management upon dismissal from the team.

8. OC SAN management may remove members from the MRT based upon OC San needs. If it is determined through a fit for duty exam that a member or potential member is unable to meet the minimum physical requirement to satisfy the basic physical needs for this role, they will no longer be able to participate until they can meet the physical requirement, or the individual may resign from the Team.

9. OC San does not support or endorse any training that is beyond the emergency medical training provided to the MRT.

10. The team shall consist of no more than 40 members.

11. The organization of the Medical Team is designed to support “inter-agency” incident responses as well as supporting the Incident Command System. If outside public health agencies respond to OC San, the MRT will act in a support role.

12. It is encouraged for the MRT to make recommendations of potential candidates based on team and OC San need. Potential candidates will be reviewed and approved by Risk Management. Selections may be made based on location and shift to make reasonable efforts to ensure maximum MRT coverage.

IV. Procedure

A. Medical Program Description

1. OC San provides medical services and programs for all employees. The Medical Program Administrator is Celia Chandler, Director of Human Resources.

2. Cal/OSHA has promulgated various regulations to protect and improve the health and safety of workers. Based on the implementation of the medical requirements within comprehensive safety policies, OC San complies with the medical program provisions of Cal/OSHA.

3. Medical services and programs include pre-employment physicals, first aid/AED/CPR training, injury treatment, return to work evaluation, emergency services, and wellness programs. Information on these programs can be found in the following procedures:

    a. Human Resources Policy 1.3 Workplace Violence and Weapons

    b. Human Resources Policy 3.3 Leave-of-Absence with Pay

    c. Human Resources Policy 3.4 Leave-of-Absence Without Pay

    d. Human Resources Policy 5.20 Substance Abuse

    e. Human Resources Policy 5.21 Smoking

    f. SOP-106 Hearing Conservation Program

    g. SOP-109 Respiratory Protection Program

    h. SOP-110 Radiation Safety Program

i. SOP-112 Integrated Emergency Response Program
j. SOP-113 Bloodborne Pathogen
k. SOP-121 Asbestos
l. SOP-122 Lead
m. SOP-203 Ergonomics
n. SOP-207 Hexavalent Chromium

B. Emergency Medical Services

1. Emergency medical services are summoned by calling the Plant 1 Control Center or the Plant 2 Operations Center from any plant phone or cell phone. Emergency notification can be made by dialing 2222 from any OC San landline, which will connect the caller to either Plant 1 Control Center or the Plant 2 Operations Center depending upon the location the person called from. If notification needs to be made while employees are offsite or from a cell phone, they can dial either Plant 1 emergency line at (714) 593-7133 and Plant 2 emergency line at (714) 593-7677 to report emergencies.

2. Assistance from 911 will be summoned and the Medical Response Team (MRT) will be summoned by radio or other means. OC San uses the following hospitals for emergency medical care:

   a. Fountain Valley Regional Hospital
   17100 Euclid Avenue, Fountain Valley, California 92708
   (714) 966-7200

   b. Hoag Hospital
   One Hoag Drive, Newport Beach, California 92663
   (949) 764-4624

3. Emergency medical services provided by city paramedics and contracted ambulance services will transport to the closest available hospital in the event of an emergency. The OC San emergency medical plan for mass casualty accidents is in the Integrated Emergency Response Program.

C. Non-Emergency Services

1. For non-emergency medical attention, employees must report any injury immediately to their supervisor. Arrangements will be made for the employee to be evaluated by one of the following off-site occupational health clinics:

   a. Memorial Care
   17762 Beach Boulevard, Huntington Beach, CA 92647
   (714) 848-0080

   b. ProCare
   17232 Red Hill Avenue, Irvine, CA 92614
   (949) 752-1111

2. Off-site occupational health clinics will be assessed annually by OC San's Workers' Compensation Third-Party Administrator (TPA). The assessment will be conducted to verify that the clinics can continue to support the expected services. The assessments will be documented accordingly.

3. If the injured employee and their supervisor determine that the employee's injury does not impair them from operating a vehicle, then they are authorized to drive themselves for off-site medical care. If the employee does have an injury that would impair them from safely operating a vehicle, then the employee's supervisor shall assign an OC San employee to drive them for treatment. An OC San vehicle is to be used to drive them to either an approved Clinic or a local hospital if their wounds are not so severe to require transportation by ambulance. OC San may elect to use a different means (i.e., use of emergency contact, supervisor) of transportation depending on the nature of the incident.

D. First Aid

1. All employees have access to first aid supplies for their personal use in the event of a minor injury.

2. Employees must report all injuries immediately to their supervisor and are presented with this requirement repeatedly in training and on notices.

3. Supervisors may choose to direct the employee to seek further evaluation based on the nature of the injury if they suspect it is beyond first aid.

4. First aid kits, which are maintained and inspected every other month, are located throughout OC San fixed facilities and Collection's vehicles.

5. Eye wash and drench showers, which are maintained and inspected regularly, are located near chemical handling and battery areas.

6. First aid kits and AEDs at various Plant 1 and Plant 2 locations are identified on a map which is available in the Map Library of my OC San.

E. Automatic External Defibrillator (AED)

1. OC San provides automatic external defibrillators (AED) to provide a rapid response to sudden cardiac arrest for employees, service providers, and guests.

2. Personnel operating an AED must have a current certification in CPR/BBP training, AED training equivalent to that recommended by the American Heart Association, American Red Cross, and training in the use of the AED unit on site. The MRT members will be trained to operate the AED.

3. The device is indicated for emergency treatment of victims exhibiting symptoms of sudden cardiac arrest who are unresponsive and not breathing. Post-resuscitation, if the victim is breathing, the AED must be left attached to allow for acquisition and detection of the ECG rhythm. If a shockable ventricular tachyarrhythmia recurs, the device will charge automatically and advise the operator to deliver treatment.

4. Procedure

   a. AED operator shall always assess scene safety to make sure that the scene is free of hazards to them or the victim. This can include electrical dangers, chemicals, harmful people, traffic, or flammable materials.

   b. AED operator shall determine if the patient is unresponsive and not breathing. AED shall be applied and operated following instructions and training.

5. Post Incident Procedure
    a. Take the defibrillator to the Security and Emergency Management Specialist post-incident for downloading data from internal memory. The rescue data will be provided to the Physician.
    b. Check the defibrillator and replace any used supplies as soon as possible following the event so that the defibrillator may be returned to service. Perform the after-patient-use maintenance on the defibrillator.
    c. Complete the incident debrief and incident report and attach it to the Cority Incident report once completed, submit it to the Risk Management Division and a copy will be provided to the Physician.

6. Inspection
    a. Inspect the exterior, pads connector port or pads cartridge well for dirt or contamination.
    b. Check supplies, accessories and spares for expiration dates and damage.
    c. Check operation of the defibrillator by removing and reinstalling the battery and running a battery insertion test.
    d. Close the lid and verify that the STATUS INDICATOR on the handle is GREEN.
    e. Each person who has an AED assigned to them shall perform a monthly check. This includes the AED's assigned to a building (will be assigned per their location).
    f. The Maintenance Log will be checked at each MRT meeting or randomly by Risk Management.
    g. Supplies that are included with each AED are: CPR barrier, scissors, gloves, and razor, extra set of pads and towel or gauze.

7. Interferences
    a. Radio Frequency (RF) from cellular phones, CB radios and FM 2-way radio may cause incorrect rhythm recognition and subsequent shock advisory. When attempting a rescue using the AED, do not operate wireless radiotelephones within 1 yard (3 feet) of the AED – turn power OFF to the radiotelephone and other like equipment near the incident.
    b. Possible Interference with Implanted Pacemaker Therapy should not be delayed for patients with implanted pacemakers and a defibrillation attempt should be made if the patient is unconscious and not breathing. The AED has pacemaker detection and rejection, however with some pacemakers the AED may not advise a defibrillation shock.
        1) Do not place the pads directly over an implanted device.
        2) Place the pad at least an inch from any implanted device.

F. Medical Surveillance

1. The following types of medical surveillance exams are offered at no cost to the employee and are tailored based on the occupational hazard exposure being monitored:

a. Baseline Examination or Pre-Employee Health Screening

1) All applicable employees shall be given a baseline examination before being assigned to work with respirators or in areas containing potentially hazardous or Cal/OSHA regulated substances above established threshold limit values (TLV).

2) Pre-employment health screenings will be scheduled by the Human Resources Division post-offer of employment by OC San. All health screenings are carried out by physicians or other licensed health care providers and all medical records are to remain confidential.

b. Periodic Examination (Annual, Biennial, or as determined by the employee based on their role, by physician or by regulation)

1) All personnel who have taken the baseline examination and have received clearance by the Examining Physician to participate in activities that may potentially result in exposure shall be reexamined annually or more frequently depending on the exposure and associated regulatory requirement. The date of each annual examination should fall on or be scheduled as closely as possible to the anniversary of the previous examination.

2) Any employee who has not participated in potentially hazardous work, or who is no longer required to use a respirator, during the 12-month period following the last annual examination and who does not expect to continue to participate, may discontinue participation in the medical monitoring program. Risk Management must be advised and consent to this change. The employee must be cleared by the Physician and not had exposure Cal/OSHA regulated carcinogens during this period.

c. Occupational Exposure / Possible Occupational Exposure

1) Special testing may be required on certain projects due to the potential for exposure to specific substances. Emergency testing may be necessary in the event of employee exposure. The need for special testing will be assessed by the RM/EHS Director on an ongoing basis.

2. Medical surveillance for hearing conservation baseline and annual audiometric tests, and pulmonary function and fit testing for the respiratory protection program are accomplished using a mobile testing service or the above listed non-emergency services.

3. Other types of medical surveillance are handled through communication with Risk Management.

G. Regulatory Compliance

1. OC San will implement the medical surveillance requirements of Cal/OSHA for the following category of hazards as applicable: Arsenic (Inorganic), Asbestos (General Industry), Asbestos (Construction), Bloodborne Pathogens, Cadmium, Carcinogens (Suspect), Chromium (VI) or Hexavalent Chromium, Compressed Air Environments, Diving Operations, Ethylene Oxide, Formaldehyde, Hazardous Chemicals in Laboratories, Lead, Noise, Respirable Silica, or Respiratory Protection.

2. Cal/OSHA has a regulatory standard for repetitive motion injuries which has been issued (8 CCR 5110). OC San follows this regulation for its ergonomic program, SOP-203.

H. Respirator Certification

1. All employees must have the appropriate medical clearance prior to respirator fit testing and use of any respiratory protective equipment. Refer to the Respiratory Protection Program SOP-109 for more details.

I. Wellness Programs

1. Annual Health Fair
    a. OC San offers annual interactive Health Fairs at Plant 1 and Plant 2, during which employees can gain health education and learn about their benefits by interacting and engaging with health insurance providers and other vendors offering health-related products and services.
    b. Health screenings for longevity, early detection and biometric screening are also available.
2. Vaccinations
    a. Employees may obtain flu shots annually at the Health Fair at no cost. Flu shots may also be provided outside of the Health Fair during flu season.
    b. Vaccinations are offered to employees for Hepatitis A, Hepatitis B and Tetanus.
3. Health Education
    a. A variety of onsite seminars and classes are offered throughout the year to provide health and wellness education, tips, and lifestyle skills to employees. Classes and seminars are advertised to employees as they come up throughout the year.
4. Wellness Events
    a. OC San hosts a variety of wellness activities for interested employees to participate in, including the American Red Cross blood drives, early detection health screenings, and walking events. Events are advertised to employees throughout the year as they come up.
5. Onsite Gyms
    a. An onsite gym is available for employees at Plant 1 and Plant 2. The gym is provided at a nominal membership fee in accordance with Human Resources Policy 5.4 Employee Participation in Athletic and Recreational Activities on Off-Duty Time.
6. Walking Paths
    a. Walking paths are available at Plant 1 and Plant 2. Employees may utilize them during breaks and lunch periods.
7. Stretching

a. OC San encourages employees stretch to prevent musculoskeletal injuries from occurring. Stretching is voluntary. Risk Management recommends pre-shift warm up stretches, which are to be led by the supervisor or designee. The stretches are not to replace any medical care or medical advice given by an employee's physician. Employees shall know their limit and only stretch within their body's physical limitations.

b. Employees reporting or who have any of the following conditions, shall cease stretching and consult their physician before resuming exercise:

1) Lack of joint movement

2) Joint inflammation

3) Neuropathy

4) Bone disease

5) Prolonged use of steroids

6) Untreated hypertension

7) Nerve root damage or radiation pain

8) Pregnancy

c. The total duration of pre-shift warm-up stretching should take about 5-10 minutes to complete, depending on the stretches chosen.

V. Access to Medical Records

A. Right to Receive Exposure/Medical Information

1. In accordance with Title 8 CCR 3204, the following individuals and organizations have the right to receive copies of medical monitoring exposure, analysis based on exposure and medical records:

a. Employees (current and former)

b. Representatives of current or former employees:

1) Holding employee's written authorization to represent,

2) Their recognized collective bargaining agent. The collective bargaining representative must have written authorization to access the employee's medical records

3) Legal representatives of those employees that are:

a) Deceased, or

b) Legally incapacitated

c. Representatives of Cal/OSHA

B. Records Covered

1. All records covering environmental monitoring, biological monitoring results (excludes results, which assess the biological effect), Safety Data Sheets (SDS) and chemical inventories.

2. Employee medical records such as questionnaires, examination results, laboratory test, medical opinions, and diagnosis, first aid records, employee treatment and employee complaints.

C. Retention of Records

1. All medical records will be retained for 30 years following the employee's employment termination date.

2. Exception: An employee who has worked for less than one year may choose to receive his/her medical records. If choosing to receive these medical records, the employee must sign an acknowledgement of receipt of the records, citing Title 8, CCR Section 3204.

D. Obtaining Records

1. Employees or designated representatives have the right to receive one copy of medical records after provided Human Resources with a written authorization.

2. A Request for Medical Records form can be obtained through Risk Management. Authorization contains the following:
    a. Name and signature of the employee.
    b. The date of the request/authorization.
    c. The name of the individual or organization authorized to release the medical information.
    d. The name of the individual or organization authorized to receive the released information.
    e. A general description of the medical information that is authorized to be released.
    f. A general description of the purpose for release of the medical information and a date or condition upon which the written authorization will exposure.

3. A copy of the requested medical records is provided without cost.

4. Employees who access medical records shall be trained in the Access to Medical Records course.

VI. Emergency Medical Training

A. Employees who volunteer to provide emergency medical aid shall be trained in Advanced First Aid following the training guidelines outline in Title 22 CCR §100023. This includes patient care, first aid and CPR procedures, recognition of the hazards associated with injury/treatment, site safety and bloodborne pathogens/universal precautions, and protective equipment to minimize the risk of an accident or exposure.

B. Employee training shall be documented with respect to the specific equipment and tasks for which the employee is qualified. Classroom training is a useful way to ensure

that employees share a common level of basic knowledge on which to build specific training.

C. OC San has determined that MRT members shall be trained at the advanced level outlined in Title 22 CCR §100023. Refresher training will be provided at least quarterly. Employees will be retrained in first aid and CPR every two years.

D. At no time shall an MRT member perform or provide any medical treatment he/she has not been trained or authorized to provide. If an MRT member is found working outside of his/her level of training and scope he/she may be subject to disciplinary actions, up to and including termination as well as personal liability for gross negligence.

E. The training materials for the MRT can be made available by Risk Management. Employee training records include employee name, instructor name, training date, and test score, if applicable. Employee training records are maintained in the computerized Training Management System Database.

VII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

Medical records of employees, such as medical diagnoses, first aid records, and medical exam results, are retained for the duration of the employee's employment plus thirty years. Exposure records of employees that are exposed to toxic substances or harmful physical agents are retained for a minimum of thirty years. Medical and exposure records are confidential as protected health information and are available to OC San employees, their designated representatives, and to Cal/OSHA for review and/or copying through Risk Management.

VIII. References

CA Health & Safety Code § 1799.102 – "Good Samaritan Law"

Title 22 CCR §100023. Advanced First Aid and CPR for First Responders

Title 8 CCR §3204. Access to Employee Exposure and Medical Records

IX. Revision History

Version	Date	By	Reason
0	04/18/2003	Reed, Jeff	New Policy
1	04/31/2006	Saum, Jeremy	Periodic Update
2	05/04/2010	Ray, Ellen	Periodic Update
3	10/03/2010	Ray, Ellen	Periodic Update
4	05/14/2012	Tetsch, Gina	Periodic Update
5	06/22/2020	Frattali, John	Periodic Update – Refer to Program Change Log
6	12/07/2021	Ventanilla, Sheri	Annual Program Review – Refer to Program Review Findings change log

ORANGE COUNTY SANITATION DISTRICT	SOP-112 (Ver. 3) Emergency Response Plan
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

This policy has been developed to ensure the Orange County Sanitation District (OC San) Integrated Emergency Response Plan (IERP) is structured to contain plans and procedures for preparing for and responding to emergencies. The goal is to protect human life, the environment, mitigate risk of damage to critical OC San infrastructure, and to respond to and recover from manmade or natural disasters.

This policy establishes the requirements, procedures, and necessary training required for implementing the IERP and activating the Incident Command System (ICS). This policy applies to all OC San employees, contractors, visitors, and regulatory personnel who may interface with OC San during an emergency.

II. Background

OC San has developed the IERP to comply with the state of California Occupational Safety and Health Administration (CAL OSHA) regulation for Emergency Action Planning (Title 8, California Code of Regulations (CCR), Section 3220). The IERP covers the designated actions OC San and employees must take to ensure employee safety during foreseen emergencies, including identification of emergencies, response procedures and plans, notifications, evacuation, and training.

The IERP meets the requirements codified within the Standardized Emergency Management System (SEMS), a requirement of California Code §8607, the National Incident Management System (NIMS), a requirement of Presidential Policy Directive 8, and is compatible with federal emergency planning concept such as the National Response Framework (NRF).

III. Definitions

Activate – To implement the Incident Command System as appropriate to the scope of an emergency. OC San uses three levels of activation, minor emergency, major emergency, and disaster.

Disaster – A sudden calamitous emergency event causing great damage, loss, or destruction.

Emergency – A condition of disaster or of extreme peril to the safe of persons and properly caused by such conditions such as fire, flood, hazardous material releases, storms, epidemics, civil unrest, drought, sudden and severe energy shortage, animal infestation or diseases, earthquake (or prediction), or other conditions as determined by the General Manager or designee.

Incident Command System (ICS) – A nationally used, standardized on-scene emergency management system.

Mutual Aid – A voluntary provision of services and facilities provided by OC San or another agency or city when existing OC San or agency resources prove to be inadequate.

Standard Emergency Management System (SEMS) – A system required by the California Government Code for managing responses to multi-agency and multi-jurisdictional emergencies.

Unified Command – A unified effort that allows all agencies with responsibility for an incident to manage the incident by establishing a common set of incident objectives and strategies.

IV. Responsibilities

The roles and responsibilities for the IERP administration and implementation are included in the functional annexes of the IERP. The IERP includes a roster of the Emergency Operations Center (EOC). The roster contains the contact information and roles of the ICS. This policy and the IERP are maintained by the Risk Management Division and located on its SharePoint page. The Safety and Health Supervisor or Security and Emergency Management Planning Specialist can be contacted for further information regarding the IERP, including roles and responsibilities.

V. Requirements

A. General

1. The IERP contains a collection of emergency operational plans (EOPs), which outline the methodologies and procedures for preparing for and responding to all-hazards.

2. The IERP includes provisions for developing emergency specific procedures, including evacuation and exit route assignments.

B. IERP Structure

1. The IERP is organized into Functional and Situational Annexes which guide OC San's response to manmade and natural disasters.
    a. Functional Annexes align with the Federal Emergency Management Agency (FEMA) Emergency Support Functions (ESFs).
        1) Functional Annexes include logistics, communications, operations, maintenance, engineering, emergency management, cybersecurity, recovery, environmental, health and medical services, HAZMAT response, security, and public affairs.
        2) These are discipline-specific groups that develop Functional Annexes to describe goals, objectives, operational concepts, capabilities, organizational structures, and replaced policies and procedures.
    b. Situational Annexes are developed for each of the hazard responses that are likely to or could possibly occur at OC San.

1) Situational Annexes include earthquake, power outage, pandemic event, fire, Tsunami, atmospheric hazard, HAZMAT spill or release, man-made physical disruption, mand-made technological disruption, flood, landslide, coastal erosion, extreme weather, severe storm, high winds, severe thunderstorm, and drought.

2) These Annexes stipulate certain actions to be taken by individuals at the time of the incident. These actions would usually take course prior to or during the establishment of an Incident Command (IC) because they are time dependent.

2. OC San's emergency response organization utilizes the Incident Command System (ICS), which is a management system designed to enable effective and efficient incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure and are considered critical plant operations.

3. OC San has implemented the ICS into its operational framework to manage all emergencies and to better integrate its resources if they are utilized for mutual aid efforts throughout the County of Orange. As such, the IERP outlines the OC San ICS structure in the Base Plan Sec. VIII (Incident Command System) of the IERP.

C. Evacuation

1. The IERP Evacuation Annex prescribes procedures to ensure safe evacuation of OC San facilities. Responsibilities are delegated from the ICS to evacuation wardens, evacuation coordinators, IERP coordinator, employees, contractors, and visitors. Provisions are set in place for management to account for personnel location and presence following an emergency evacuation.

2. Procedures are developed to mitigate consequences of various hazards including but not limited to earthquakes, floods, wild and urban fires, and power outages.

D. Communication and Reporting

1. The preferred means of emergency and disaster reporting shall occur via notification to the OC San Control Center via two-way radio or telephone. The Control Center operator is available for emergency contact 24 hours a day, 7 days a week. From an OC San landline, the Control Center can be reached by dialing 2222, or the following from a cell phone:

   a. Plant 1 Emergency Phone number: 714-593-7133

   b. Plant 2 Emergency Phone number: 714-593-7677

   c. These emergency phone numbers can be found on emergency evacuation maps located near each emergency exit.

   d. Assistance from 911 will be summoned by the OC San Control Center and the Medical Response Team will be summoned by radio or other means.

2. Dial 911 emergency services when outside of OC San Plants 1 and 2 at offsite OC San pump stations and service locations. Notify the Control Center at 714-593-7025 regarding the emergency.

3. OC San has various alarm and mass communication tools to alert employees of emergencies and evacuation orders including but not limited to:
    a. Public Address infrastructure for occupied buildings
    b. Mass communication messaging software that alerts employees via SMS, email, and telecommunication
    c. Radio communications
    d. Process areas have area monitoring for hazardous atmospheres that trigger emergency action procedures.
4. After action reports are developed for real-world events and exercises. These reports will summarize findings and assist in developing Corrective Action Plans.

E. Training and Awareness

1. The IERP contains provisions for training personnel on the plan. Employees are advised of their respective responsibilities detailed in the annexes of the IERP initially when the plan is developed, whenever the employee's responsibilities or designated actions under the plan change, and whenever the plan is changed.
    a. All staff undergo disaster service worker training.
    b. Employees assigned to ICS and EOP roles undergo Federal Emergency Management Agency National Incident Management Systems ICS Series training.
    c. Management train their respective divisions on their roles related to emergency response actions as dictated by the Annexes of the IERP.
2. Prevention planning is detailed in the IERP in the form of the hazard profile and mitigation strategy. Based off the likelihood of a hazard and its magnitude, OC San implements a variety of mitigation strategies that would lessen the impact of a disaster, shorten the total response time, and expediate recovery.
3. Medical Response Team (MRT) members are responsible for evacuating to assembly areas with OC San provided backpack and equipment containing medical supplies and await further instructions from the ICS. Treatment areas, documentation, treatment, and transportation procedures are outlined in the IERP Medical Plan Annex.
4. The IERP plan elements are used and tested on a regular basis to maintain, update, and reinforce best practices. Continued development and updates to the IERP are essential to OC San to maintain a state of readiness.

VI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents

are properly marked, indexed, and filed for their projects or area of responsibility. This policy and the IERP are maintained by the Risk Management Division and located on its SharePoint page.

VII. References

CCR Title 8, § 3220 Emergency Action Plan,

CCR Title 8, § 3221 Fire Prevention Plan

CCR Title 8, § 5192 Hazardous Waste Operations and Emergency Response

CCR Title 19, Division 2, Chapter 4, Hazardous Material Release Reporting, Inventory, and Response Plans

CCR Title 22, § 66265.30 through 37, Preparedness and Prevention Plan

CCR Title 22, § 66265.50 through 56, Contingency Plan and Emergency Procedures

CFR, Title 40, Part 112, Spill Prevention Control and Countermeasure Plan

Health and Safety Code, § 2400 et seq. Standardized Emergency Management Systems

Health and Safety Code, § 25500 et seq. Minimum Standards for Business

Integrated Emergency Response Plan, Volume I, Emergency Preparedness.

Integrated Emergency Response Plan, Volume II, Emergency Procedures.

VIII. Revision History

Version	Date	By	Reason
1.0	10/03/2013	Rivera, George	New policy
2.0	08/14/2020	Frattali, John Harp, Derek Huynh, Brian	Periodic Update – Refer to Program Change Log
3.0	12/8/2021	Ventanilla, Sheri	Annual Program Review – Refer to Program Review Findings Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-113 (Ver. 4) Bloodborne Pathogens (BBP) Exposure Control Plan
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

A. The Orange County Sanitation District (OC San) is committed to providing a healthy and safe work environment for its employees, contractors, and visitors. To this end, OC San has maintained this Exposure Control Plan to prevent and minimize occupational exposure to bloodborne pathogens using engineering controls, administrative controls, and personal protective equipment.

B. The purpose of this Exposure Control Plan (ECP) is to protect the health and safety of those employees who have the potential to be exposed to blood or other potentially infectious materials as part of their job responsibilities.

II. Background

A. OC San has developed this procedure in accordance with the state of California Occupational Safety and Health Administration (CALOSHA) regulations, including Bloodborne Pathogens (Title 8, California Code of Regulations (CCR), Section 5193) and Access to Employee Exposure and Medical Records (Title 8, CCR, Section 3204).

B. The ECP is a key document to assist OC San in implementing and ensuring compliance with the standard, thereby protecting our employees. This ECP includes:

1. Determination of employee exposure
2. Implementation of exposure control methods
3. Hepatitis B vaccination
4. Post-exposure evaluation
5. Communication and training
6. Recordkeeping
7. Evaluation

C. The methods to implement these elements are discussed in the subsequent pages of this ECP.

III. Definitions

Antibody: a substance produced in the blood of an individual which can produce a specific immunity to a specific germ or virus.

Blood: human blood, its components, and products made from human blood.

Bloodborne Pathogens: pathogenic (disease producing) microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Contaminated: the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Laundry: laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

Contaminated Sharp: any contaminated object that can penetrate the skin including, but not limited to needles, scalpels, broken glass, capillary tubes, and the exposed ends of dental wires.

Decontamination: the use of physical or chemical means to remove, inactivate, or destroy Bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use or disposal.

Engineering Controls: controls (i.e., sharps disposal containers, self-sheathing needles) that isolate or remove the bloodborne pathogens hazard from the workplace.

Exposure Control Plan: a written program developed and implemented by the employer which sets forth procedures, engineering controls, personal protective equipment, work practices and other methods that are capable of protecting employees from exposures to bloodborne pathogens, and meets the requirements spelled out by the OSHA bloodborne Pathogens Standard.

Exposure Determination: how and when occupational exposure occurs and which job classifications and/or individuals are at risk of exposure without regard to the use of personal protective equipment.

Exposure Incident: a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Hand Washing Facilities: a facility providing an adequate supply of running potable water, soap, and single use towels, medicated towelettes or hot air-drying machines.

HBV: means Hepatitis B Virus.

HCV: means Hepatitis C Virus.

HIV: means Human Immunodeficiency Virus.

Needle or Needle Device: a needle of any type, including, but not limited to, solid and hollow-bore needles.

Occupational Exposure: a reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Other Potentially Infectious Material (OPIM): human body fluids: semen, vaginal menstrual blood, vomit, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any bodily fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Parenteral: piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.

Pathogen: a bacteria or virus capable of causing infection or disease.

Personal Protective Equipment: specialized clothing or equipment worn for protection against a hazard. Personal protective equipment may include, but is not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection equipment, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices.

Regulated Waste: liquid or semi-liquid blood or OPIM in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Sharp: any object used or encountered that can be reasonably anticipated to penetrate the skin or any other part of the body, and to result in an exposure incident, including, but not limited to, needle devices, scalpels, lancets, broken glass, broken capillary tubes, exposed ends of dental wires and dental knives, drills, and burs.

Sharps Injury: any injury caused by a sharp, including, but not limited to, cuts, abrasions, or needlesticks.

Sharps Injury Log: a written or electronic records satisfying the requirements of subsection (c)(2) of Title 8, CCR, Section 5193.

Source Individual: any individual, living, or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee.

Sterilize: the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Synovial Fluid: the clear amber fluid usually present in small quantities in a joint of the body (i.e., knee, elbow).

Universal Precautions: an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Work Practice Controls: controls that reduce the likelihood of exposure by altering the way the task is performed.

IV. Roles and Responsibilities

A. Risk Management

1. Communicate the exposure controls to OC San staff who job responsibilities may exposure employees to blood or other potentially infectious materials.
2. Ensure that this plan is reviewed annual and revised, as necessary.
3. Ensure that a copy of this plan is accessible to employees in accordance with Title 8, CCR, Section 5193.
4. Responsible to maintain employee health and OSHA records.
5. Ensure that training and documentation of training is maintained.

B. Employees

1. Those employees who are determined to have occupational exposure to blood or other potentially infectious materials (OPIM) must comply with the procedures and work practices outlined in this ECP.

2. Communicate health and safety concerns, issues, and questions to their supervisor or to Risk Management.
3. Immediately report all exposure incidents to the employee's supervisor or the Risk Management Division.

V. Exposure Determination

A. CALOSHA requires employers to determine which employees may have work exposure to blood or other potentially infections materials. The exposure determination is made without regard to the use of personal protective equipment.

B. The following exposure determinations have been made according to job classification and tasks, and without regard to the use of personal protective equipment (PPE):

1. Employees who voluntarily render first aid (Medical Response Team)
2. All employees within the following job classification(s) have occupational exposure:
    a. Electrical Tech (I & II)
    b. Instrumentation Tech (I & II)
    c. Lead Electrical Tech
    d. Lead Instrumentation Tech
    e. Lead Mechanic
    f. Lead Source Control Inspector
    g. Machinist
    h. Maintenance Specialist
    i. Maintenance Supervisor
    j. Maintenance Worker
    k. Mechanic
    l. Reliability Maintenance Tech
    m. Senior Mechanic
    n. Source Control Inspector (I & II)
    o. Source Control Supervisor
    p. Welder-Fabricator
3. Some employees within the following job classification(s) have occupational exposure:
    a. Boat Captain
    b. Environmental Specialist
    c. Principal Environmental Specialist
    d. Scientist
    e. Senior Environmental Specialist
    f. Senior Scientist
4. The following list of tasks or groups of closely related tasks, in which exposure occurs, performed by employees in job classifications listed in Section V(A)(3).

a. Ocean Monitoring

C. Risk Management maintains the list of recognized personnel. The list of persons may change periodically.

VI. Methods of Compliance

A. Universal Precautions

1. Employees to observe universal precautions to prevent contact with blood or other potentially infectious materials.
2. When differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.
3. Use gloves, masks, and gowns if blood or other infectious materials are anticipated.
4. Use engineering and work practice controls to limit exposure.

B. Standard Precautions

1. Employees shall implement the following standard precautions to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources:
   a. Hand and Body Washing
      1) Washing facilities will be readily available. If this is not feasible, antiseptic hand cleanser, single use towels or antiseptic towelettes will be made available with hand washing to be done as soon as possible thereafter.
      2) Employees shall wash hands after removal of personal protective gloves and whenever there is a likelihood of contamination. In addition, any contaminated skin area will be washed as soon as possible.
      3) If blood or other potentially infectious material contacts mucous membranes, those areas shall be washed or flushed with water as appropriate as soon as possible.
         a) All bins, pails, cans, and similar receptacles intended for reuse which have a reasonable likelihood for becoming contaminated with blood or OPIM shall be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as feasible upon visible contamination.
         b) Protective coverings, such as plastic wrap, aluminum foil, or imperviously backed absorbent paper used to cover equipment and environmental surfaces, shall be removed, and replaced as soon as feasible when they become overtly contaminated or at the end of the work shift if they may have become contaminated during the shift.
         c) Area shall be cleaned at the end of the work shift if the surface may have become contaminated since the last cleaning.
      4) Education of employees so that splashing, spraying, or spattering of blood or body fluids is minimized.
   b. Other Work Practices
      1) Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.

2) Food and drink must not be kept in refrigerators, freezers, shelves, and cabinets or on countertops or bench tops where blood or other potentially infectious materials are present.

3) Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.

C. Personal Protective Equipment (PPE)

1. PPE will only be considered appropriate if it does not permit blood or other potentially infectious materials to pass through or reach clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use.
2. PPE that is appropriate to the potential exposure will be made available, and where necessary, made of hypoallergenic material. If the employee declines to wear PPE, the circumstances will be investigated and documented.
3. Medical responders will remove PPE prior to leaving the incident area and place in appropriately designated container for decontamination or disposal. Defective, damaged, or questionable PPE will be repaired or replaced as needed.
4. Medical responder shall wear gloves when it is reasonably anticipated that the employee may have hand contact with blood or other potentially infectious materials, mucous membranes and/or non-intact skin. They will also be worn when handling or touching contaminated items or surfaces. Gloves must be disposable and will be exchanged for a new pair when contaminated, torn, or punctured. Single-use gloves shall not be washed or decontaminated for reuse and must be properly disposed.
5. Masks, eye protection and face shields are required whenever splashes, spray, spatter, or droplets may be generated and eye, nose, or mouth contamination can be reasonably anticipated.
6. Gowns, aprons, and other body clothing are required when splashing, splattering, or spraying of the body with blood or other potentially infectious materials is reasonable anticipated.

D. Cleaning and Decontamination

1. Exposed persons shall clean and disinfect surfaces by use of an appropriate disinfectant as soon as possible after contact.
2. Contaminated waste and/or laundry such as bloodied bandages or clothing shall be placed in leak-proof container or bag and labeled, or color coded per Labeling and Signage section of this program.
3. Contaminated sharps shall be picked up via mechanical means (i.e., brush and dustpan) and discarded immediately in container that is puncture resistant, lead-proof and labeled or color coded per Labeling and Signage section of this program.
4. Contaminated waste will be managed by Risk Management and transported and disposed by a Risk Management approved vendor.

VII. Labeling and Signage

A. Warning labels shall be affixed to containers of regulated waste, laundry and sharps, and other containers used to store, transport or ship blood or other potentially infectious materials.

B. The warning labels with biohazard symbol in fluorescent orange or orange-red or predominately so, with lettering and symbols in contrasting color. Waste labels shall

contain words BIOHAZARDOUS WASTE or SHARPS WASTE. Red bags or red containers may be substituted for labels except for sharp containers or regulated waste red bags.

VIII. Hepatitis B Vaccination

A. Hepatitis B (HBV) vaccination series will be made available to all employees who fall under this program at no cost to the employee. The healthcare provider who examines the employee will document if HVC vaccination is indicated and if the employee received the vaccination. Vaccination is encouraged unless:

1. Documentation exists that the employee has previously received the series.
2. Antibody testing reveals that the employee is immune.
3. Medical evaluation shows that vaccination is contraindicated.

B. If an employee declines the vaccination, a declination form will be signed by the employee. A copy of the declination form will be kept in the employee's confidential medical record. However, if the employee later decides to have the vaccination and is still covered under this program, the vaccination will be made available at that time.

C. Employees will be provided with information on HBV vaccinations addressing its safety, benefits, efficacy, methods of administration and availability.

D. OC San will notify all employees who receive HBV vaccination of the location of the clinic providing the vaccine.

E. Employees shall receive vaccine during normal working hours or be compensated during non-working hours.

IX. Post Exposure Evaluation and Follow-Up

A. Post-Exposure Evaluation and Follow-up will be made available immediately following an exposure incident. OC San will provide the medical provider a description of the employee's duties as they relate to the exposure incident, the route and circumstances of exposure, and employee's medical records including HBV vaccination status if not already available to the medical provider.

B. The medical provider will provide a written medical opinion to OC San which will contain only that the employee has been informed of the results of the evaluation and has been told about any medical conditions that require further evaluation or treatment. The employee should receive a more detailed confidential evaluation from the medical provider.

C. Testing of the employees' blood will be done as soon as possible as recommended by the medical provider. If the employee decides to give consent for blood to be drawn but not tested, the employee will have 90 days in which to change their mind as the sample must be preserved for 90 days.

D. The person (if known) whose blood or body fluid is the source of an exposure will be tested for HBV, HCV, and HIV infection as soon as feasible upon their consent.

1. When the source is already known to be infected with HBV, HCV, or HIV then testing need not be repeated.
2. Information from the medical record at the time of the exposure (e.g., laboratory test results, admitting diagnosis, or previous medical history) or the source person will be collected to help confirm or exclude bloodborne infection.

3. HBV, HCV, and/or HIV testing shall be performed if the infection status of the source person is unknown.
4. Results of source testing shall be provided to the employee, and the employee shall be informed of all applicable laws and regulations concerning disclosure of the identity and infectious status of the source.
5. The health department will be consulted if consent for source testing cannot be obtained (Orange County Health Care Agency).

X. Training

A. All employees who are trained in First Aid/CPR and have potential occupational exposure to bloodborne pathogens will receive training at the time of initial assignment and at least annually thereafter. Training will include:

1. Information on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases.
2. A copy and explanation of the standard.
3. An explanation of OC San's exposure control plan and how to obtain a copy.
4. An explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident.
5. An explanation of the use and limitations of engineering controls, work practices, and PPE.
6. An explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE.
7. An explanation of the basis for PPE selection.
8. Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine will be offered free of charge.
9. Information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM.
10. An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
11. Information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident.
12. An explanation of the signs and labels and/or color coding required by the standard and used at OC San.
13. An opportunity for interactive questions and answers with the person conducting the training session.

B. Training records will be completed for each employee upon completion of training. These documents will be kept with the employee's records and will include:

a. Dates of the training sessions.
b. Contents or a summary of the training sessions.
c. Names and qualifications of persons conducting the training sessions.
d. Names and job titles of all persons attending the training sessions.

C. Training records will be maintained for a minimum of three (3) years from the date on which the training occurred.

1. Employee training records will be provided upon request to the employee or the employee's authorized representative within 15 working days.

XI. Medical Records

A. The Risk Management Division is responsible for maintenance of the required medical records.

B. Medical records are maintained for each employee with occupational exposure in compliance with 8 CCR 3204 and will include:

1. The name and social security number of the employee.
2. A copy of the employee's hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination.
3. A copy of all results of examinations, medical testing, and follow-up procedures as required by the bloodborne pathogens standard.
4. A copy of all health care professional's written opinion(s) as required by the bloodborne pathogens standard.

C. All employee medical records will be kept confidential and will not be disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by the standard or other legal provisions.

D. Employee medical records shall be maintained for at least the duration of employment plus 30 years.

E. Employee medical records will be provided upon request of the employee or to anyone having written consent of the employee within 15 working days.

XII. Recordkeeping

All records created or generated in the course of this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

Sharps injuries may occur as part of the work tasks conducted at OC San. A sharps injury log is maintained and retained for five years from the date the exposure incident occurred.

The annual review for this procedure will also include the following:

1. New or modified tasks and procedures which affect occupational exposure
2. Changes in technology that eliminate or reduce exposure to bloodborne pathogens
3. New or revised employee positions with occupational exposure
4. Review and evaluate the exposure incidents which occurred since the previous update, and
5. Review and respond to information indicating that the ECP is deficient in any area

XIII. References

Title 8, California Code of Regulations, Section 3204, Access to Medica and Exposure Records

Title 8, California Code of Regulations, Section 5193, Bloodborne Pathogens

XIV. Revision History

Version	Date	By	Reason
1	01/15/2002	Matte, James	New
2	10/11/2011	Bauer, Wesley	Program Update
3	07/09/2019	Frattali, John	Periodic Update – Refer to Program Change Log
4	12/07/2021	Ventanilla, Sheri	Annual Program Review – Refer to Program Review Findings change log

ORANGE COUNTY SANITATION DISTRICT	SOP-118 (Ver. 4) Hot Work Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The Hot Work program describes the precautions that the Orange County Sanitation District (OC San) workforce and contractor employees shall take when performing hot work in OC San worksites.

The purpose of the program is to minimize or eliminate fire or explosion hazards associated with hot work. The requirements of the permitting process are intended to confirm that the proposed hot work activities are properly planned, and safety executed.

Hot work is any work that could produce a source of ignition or temperatures high enough to cause ignition of flammable gases and combustible materials. Hot work includes but is not limited to welding and allied processes, heat treating, grinding, powder-driven fastening, hot riveting, torch-applied activities, or similar applications producing or using a spark, flame, or heat.

II. Background

Performing hot work in classified and non-classified locations may be considered a hazardous work activity, and a hot work permit may be required. Guidelines for determining whether a hot work permit is required is provided in Appendix A – Hot Work Permit Applicability.

The hot work permit has four main purposes:

- To serve as written permission to perform such work.
- To provide a safety checklist to address common hazards.
- To demonstrate steps necessary for making the work site safe.
- To provide a record of safety steps taken for contract work.

If a permit is required, the hot work permit shall be completed in accordance with this document.

III. Definitions

Classified (Hazardous) Location: Any area in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. Guidance to identify classified locations can be provided by area classification diagrams (as presented in Maps and Apps on the San Box (intranet site) and by standards such as American Petroleum Institute (API) 500, National Fire Protection Association (NFPA) 70E, and NFPA 820.

Combustible Material: Any material that may ignite when introduced to an ignition source (e.g., wood, paper, cardboard, and plastic).

Competent Person: Capable, through acquired knowledge, demonstrated skills and experience of identifying existing and predictable hazards in surroundings, working conditions or behaviors; and having the authorization to take prompt corrective measures to eliminate those hazards.

Designated Area: A permanent area approved for hot work by Risk Management that is noncombustible or fire-resistive construction, is free of combustible and flammable contents and is suitable segregated from adjacent hazards. Designated areas are kept clear of combustible materials for at least 35 feet. Hot work performed in a designated area does not require a Hot Work Permit. Classified locations are never designated areas.

Flammable Gas: All combustible and flammable gas and vapors that burn in the air when the gas or vapor concentration is within the range of concentration of possible combustion.

Hot Work: Any work that could produce a source of ignition or temperatures high enough to cause the ignition of flammable gases and combustible materials.

Lower Explosive Limit (LEL): The minimum concentration of a flammable gas that will propagate a flame in the presence of an ignition source. The more explosive the gas, the lower the LEL. LEL is usually expressed as a percentage (from zero to 100 percent explosive) and is often used interchangeable with lower flammability limit (LFL).

Lower Flammability Limit (LFL): A term with the same definition of Lower Explosive Limit (LEL) and that is used interchangeably with LEL.

Primary Source Ignition (PSI) Hot Work in Classified Locations: Primary source ignition (PSI) hot work that is performed either inside a classified location or outside a classified area that the hot work may affect.

Primary Source Ignition (PSI) Hot Work: Any work with equipment and tools that is likely to ignite a flammable or combustible atmosphere, solid materials and liquids when used in a normal manner. This can include welding and burning, grinding, and cutting with discs, torch cutting and soldering, explosives, and surface temperatures greater than 390 degrees Fahrenheit.

Primary Source Ignition (PSI) Non-Class I Hot Work: Primary source ignition (PSI) hot work that is performed outside of and will not impact a Class I area.

Secondary Source Ignition (SSI) Class I Hot Work: Secondary source ignition (SSI) hot work that is performed inside a Class I area.

Secondary Source Ignition Hot Work: Any work with equipment and tools that may create low-energy sparks and ignite a flammable or combustible atmosphere when used in a normal manner or due to errors or malfunction. This may include sandblasting, using electrical or electronic equipment that is not intrinsically safe or explosion-proof, using internal combustion engines, using rotating steel brush, electrical isolation testing, producing friction spark, or soldering.

Secondary Source Ignition (SSI) Non-Class I Hot Work: Secondary source ignition (SSI) hot work that is performed outside a Class 1 area. SSI non-Class 1 hot work does not require a hot work permit.

IV. Responsibilities

A. Risk Management

1. Review and update this program annually to align with regulatory requirements and available consensus standards.

2. Provide appropriate information, education, and training for those conducting hot work activities.

3. Issue hot work permits to hot work operators.

4. Verify completed and canceled hot work permits are retained.

5. Review canceled permits to ensure conformance to this program.

6. Provide technical assistance regarding hot work protocol, atmospheric testing equipment, PPE, hazard assessment and research information on unusual hazards.

7. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single fire watch shall have an additional fire watch assigned to ensure that exposed areas are monitored.

B. Supervisors

1. Enforce requirements of the Hot Work program.

2. Ensure hot work operators and fire watch follow the hot work procedure and complete hot work permits prior to the start of hot work.

3. Verify employees have been trained prior to assigning work that requires hot work activities.

4. Verify that proper hot work-related equipment, including personal protective equipment (PPE), atmospheric testing equipment, fire protection equipment and other appropriate safety equipment, is used during hot work operations.

5. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single fire watch shall have an additional fire watch assigned to ensure that exposed areas are monitored.

C. Hot Work Operators (Employees and Contractors)

1. Shall obtain proper authorization from Risk Management to perform hot work operations via the hot work permit. The hot work operator shall participate in completion of the hot work permit.

2. Review and sign the hot work permit to acknowledge understanding of the condition documented on the permit.

3. Shall comply with conditions of the issued hot work permit.

4. Shall safely handle hot work equipment and processes.

5. Shall cease hot work operations if unsafe conditions develop and notify supervision immediately for evaluation and appropriate action.

6. Shall notify workers in adjacent areas of the hot work to be conducted who could be affected by the hot work.

7. Shall complete hot work training as required by this program, and for following all hazard control processes designated by Risk Management or supervision.

8. Shall operate air monitoring equipment to monitor the presence of flammable gas in the area where hot work is planned. This includes calibration of the air monitoring device according to the manufacturer's instructions.

9. Verify that copies of completed and canceled hot work permits are properly disseminated to Risk Management.

10. Make fire extinguishing equipment readily available and be trained in its use.

11. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single fire watch shall have an additional fire watch assigned to ensure that exposed areas are monitored.

D. Fire Watch (Employees and Contractors)

1. Must understand the location, nature, and hazards of the hot work to be performed.

2. Survey the area to verify that the necessary fire protection equipment is in place and ready for use.

3. Confirm that safe conditions are maintained during hot work operations. The fire watch shall have the authority to stop the hot work operations if unsafe conditions develop.

4. Make fire extinguishing equipment readily available and be trained in its use.

5. Remain within communication range of the person(s) performing the hot work and maintain a line of sight with the hot work.

6. Do not leave for any reason without a replacement. Watch for fires in all areas exposed to hot work and communicate to hot work operators to cease all hot work if a fire occurs.

7. Try to extinguish a fire only when the fire is obviously within the capacity of the equipment available. If the fire watch determines that the fire is not within the capacity of the equipment, the fire watch shall sound the alarm immediately.

8. Implement evacuation procedures immediately if the fire is not within capacity of the available extinguishing equipment.

9. Remain in the hot work area at least 30 minutes after the hot work has ceased to detect and extinguish possible smoldering fires.

10. Shall not have any other duties besides those specific in this practice during the hot work activities. Fire watch may perform atmospheric monitoring.

11. The fire watch shall be familiar with the procedures for sounding an alarm in the event of a fire.

12. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single fire watch shall have an additional fire watch assigned to ensure that exposed areas are monitored.

V. Procedure

A. General Requirements

1. Authorization

   a. Risk Management shall authorize a Hot Work Permit before any PSI hot work (other than in a designated area), or any SSI Class 1 hot work is performed. The template hot work permit is maintained under Safety Forms on the Risk Management SharePoint site.

   b. Any volatile contaminants on OC San sites shall be evaluated to determine if the definition of Class 1 is met.

   c. A Hot Work Permit is not required for SSI non-Class 1 hot work.

2. Validity

   a. The Risk Management permit issuer shall determine the period for which the hot work permit is valid.

   b. If the hot work is suspended during a shift, the permit shall be revalidating before further hot work can continue. Revalidation involves inspecting the hot work area for any change in previous conditions and conducting air monitoring if the hot work is performed in a Class 1 area.

3. Posting and Signage

   a. The Hot Work Permit shall be posted at the work site until the hot work is completed or the permit expires. Completed permits shall be returned to the Risk Management permit issuer.

      Where the hot work area is open to persons other than the operator of the hot work equipment, conspicuous signs shall be posted to warn others before they enter the hot work area. Such signs shall display the following warning: CAUTION HOT WORK IN PROGRESS STAY CLEAR.

4. Stop Work / Permit Cancellation

   Conditions that may trigger a Stop Work notice include:

   a. All personnel involved in a hot work operation have the authority and responsibility to stop any work they consider to be unsafe.

   b. If work is stopped, the Hot Work Permit shall be returned to Risk Management for re-evaluation.

c. Condition can may trigger a stop work can include:

1) Changes in job site condition that present a hazard after permit issuance.

2) LEL >10% is detected.

3) Atmospheric monitoring equipment fails (e.g., battery depleted, calibration error, readings fluctuating).

4) Scope of work changes.

5) Unsafe condition or behavior identified by personnel involved in work.

6) Facility emergency alarms activated.

7) Occurrence of a minor incident or near miss/loss during a job task.

d. Permit cancellation can include:

1) Change out of entire work crew.

2) Change of Permit Requestor/Holder

3) Work lasts longer than one shift.

5. Applicable Permits

a. If hot work is to be performed inside a confined space, a Confined Space Job Hazard Analysis must be issued.

B. Permit Preparation and Approvals

1. Work permit forms are usually prepared by the hot work operator. The hot work operators shall seek input from individuals who have technical and procedural competencies to provide input to the permit as necessary to address the hazards and permit conditions related to hot work.

2. Once the Hot Work Permit has been prepared, Risk Management will review and sign the permit. By signing the permit, Risk Management authorizes the work to proceed.

3. The hot work operator will sign the permit after Risk Management authorizes the work. By signing the permit, the hot work operator accepts responsibility of observing the permitted work to confirm that the work is performed within the permit conditions.

4. Self-authorization may be allowed with approval from Risk Management. This may be done only for lower-risk applications such as low energy SSI Class 1 hot work.

5. Risk management will verify that the fire safety precautions required by the permit have been taken.

C. Non-Permissible Areas

1. All hot work is prohibited in areas not authorized by Risk Management and the following areas:

a. Sprinkler-equipped buildings where sprinklers are impaired unless the requirements of NFPA 25 are met.

b. In the presence of explosive atmospheres (greater than or equal to 10 percent of the LEL).

c. In the presence of unclean or improperly prepared tanks or vessels, and equipment that have previously contained flammable or combustible materials when their contents may be exposed to an ignition source.

d. Presence of combustible dusts.

D. Site Preparation

1. Preparation for All Primary Source Ignition Hot Work

a. PSI hot work is any hot work with equipment and tools that, when used in a normal manner, is likely to ignite flammable or combustible atmospheres, solid materials, and liquids.

b. PSI hot work such as grinding, has been known to generate sparks with enough energy to transport them up to 35’ from the point of hot work. It is, therefore, possible to perform PSI hot work up to 35’ away from a Class 1 location and yet still introduce an ignition source into a Class 1 area.

c. Prior to performing PSI hot work, the requirements of this section shall be met and verified by the hot work operator:

1) The hot work equipment shall be in satisfactory operating condition and good repair.

2) All combustible and flammable materials shall be relocated at least 35’ in all directions from the work site.

d. Solids (e.g., cake, combustible dust) shall be cleaned away before any work can proceed.

e. If relocating these materials is impractical, the following precautions shall be taken:

1) Shield materials with fire-retardant covers or with metal or fire-retardant guards or curtains.

2) Edges of covers at floor shall be tight to prevent entrance of sparks, including at the point where several covers overlap when a large pile is being protected.

3) A fire watch may be required.

4) A fully charged and operable fire extinguisher appropriate for the type of potential fire shall be available for use in the work area (20 lbs. minimum).

5) A nonflammable, impervious material shall seal sewer openings, ducts, and drains. Where sealing is insecure or impractical, water spray should be directed across the openings.

6) The location of the hot work relative to combustible and flammable materials and classified areas shall determine the need for a fire watch.

7) Personnel in the vicinity of the hot work shall be suitable protected against dangers such as heat, sparks, flash, and slag.

2. Preparation for Primary Source Ignition Class 1 Hot Work

a. Prior to performing any work in PSI Class 1 hot work, the requirements of Section IV.D.1 Preparation for all Primary Source Ignition Hot Work and Section IV.E Air Monitoring shall be verified by Risk Management.

1) A fire watch shall be assigned for duration of hot work and for 30 minutes after the hot work is completed to detect and extinguish any smoldering fires.

2) The venting, draining, or bleeding of flammable or combustible liquids and gases shall be stopped within 35’ of the hot work.

3) Affected excavations, conduits, drains and manholes within 35’ of the hot work shall either be monitored for the presence of flammable gas or sealed to confirm that an ignition source is not present. If the work extends over several days, the shields shall be removed at the end of each workday and replaced, accordingly.

4) Initial and continuous monitoring shall be performed and documented.

5) Non-intrinsically safe tools (including cell phones) are prohibited from use in Class 1 areas, except as defined in Section IV.E.4X, Initial and Continuous Hot Work Air Monitoring.

3. Preparation for Primary Source Ignition Hot Work within 35’ of Buildings or Structures

a. The conditions of Section IV.D.1 Preparation for all Primary Source Ignition Hot Work and this section shall be met and verified before any PSI hot work is performed inside or within 35’ of buildings or structures with materials or contents that may be combustible or flammable.

1) Openings or cracks in walls, floors or ducts within 35’ of the hot work shall be tightly covered with fire-retardant or noncombustible materials to prevent the passage of sparks to adjacent areas.

2) If hot work is performed near walls, partitions, ceilings or roofs of combustible materials, fire-retardant shields or guards shall be provided to prevent ignition.

3) If hot work is done on one side of a wall, partition, ceiling or roof, combustibles on the other side shall be relocated, if possible. If it is impractical, a fire watch shall be provided on the side of the combustibles.

4) Hot work shall not be attempted on a partition, wall, ceiling, or roof with a combustible covering or insulation, or on walls or partitions of combustible sandwich panels or similar construction.

5) If the hot work is close enough to cause ignition by conduction, it shall not be performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings roofs or other combustibles.

6) The following procedures shall apply to hot work performed near a sprinkler head:

a) A wet rag shall be laid over the sprinkler head and then removed at the conclusion of the welding or cutting operation.

b) Special precautions (e.g., ventilation, shielding) shall be taken during the hot work to avoid accidental operation of automatic fire suppression systems.

4. Preparation for Secondary Source Ignition Class 1 Hot Work

a. Secondary Source Ignition (SSI) Hot Work designates any work with equipment and tools that may create low-energy sparks and ignite a flammable or combustible atmosphere when used in a normal manner or due to errors or malfunction. SSI hot work is also referred to as ‘spark potential’ hot work.

b. Before any SSI Class 1 hot work is performed, initial air monitoring shall be performed and documented.

c. Periodic up to continuous air monitoring, as determined by Risk Management, shall be performed and documented.

d. Air monitoring equipment is to produce an audible alarm when LEL exceeds 10 percent. The air monitoring equipment shall remain in hearing range of the audible alarm and locate the air monitoring equipment between the hot work and potential vapor source. More than one air monitor may be needed to monitor the air properly.

E. Air Monitoring (Class 1 Areas)

1. General

a. Flammable and combustible liquids and gases may be present in Class 1 areas. To perform hot work safely in these areas, initial and continuous air monitoring is required to confirm that any flammable gas in the work area is detected and properly controlled.

b. If the hot work will be performed in a tank or basin, the air monitoring requirements for confined spaces will also apply.

c. When the possibility exists for an oxygen-deficient atmosphere, the oxygen level could be below the level required by the air monitor to give the correct flammability (LEL) reading. This could occur where a tank, vessel or pipe contains an inert gas such as nitrogen or carbon dioxide. For this reason, it is important to monitor oxygen levels prior to monitoring for LEL.

d. Hot work is prohibited if air monitoring readings are greater than or equal to 10 percent of the LEL.

e. All air monitoring associated with hot work shall be conducted by an authorized and trained person who is competent in the use of the instrument and hazards of the monitored area.

f. The instrument(s) used for gas monitoring shall be calibrated prior to use. Documentation of such calibrations shall be maintained.

g. Hot work air monitoring requirements are summarized in Appendix C.

2. Initial Hot Work Air Monitoring (PSI Class 1)

a. Initial hot work air monitoring shall be conducted prior to the authorization and issuance of the Hot Work Permit for PSI Class 1 hot work.

b. Initial air monitoring shall be performed by an authorized and trained person surveying no more than 5 feet from the point of hot work with a properly functioning, calibrated air monitor equipped with LEL and O2 sensors.

c. If initial air monitoring indicates the presence of any flammable gas, the hot work may not proceed until an LEL mitigation plan is developed and implemented.

3. Continuous Hot Work Air Monitoring (PSI Class 1)

a. All PSI Class 1 hot work requires attended continuous air monitoring while the hot work is being performed. An authorized and trained person shall monitor and survey the perimeter of the permitted area at least once per hour. The survey shall cover at least 35’ from the hot work area.

b. If initial air monitoring readings are 0 percent LEL, but continuous air monitoring indicates the presence of flammable gas (greater than 0 percent LEL), the hot work shall stop and an LEL mitigation plan shall be developed, documented, and implemented.

c. If the implementation of the LEL mitigation plan controls the flammability level to less than 10 percent of the LEL, the authorized gas tester will continue monitoring the area while hot work operations continue. If at any time the LEL reading reaches 10 percent LEL, the hot work shall stop until the source of the flammable gas is controlled to less than 10 percent of the LEL.

4. Initial and Continuous Hot Work Air Monitoring (SSI Class 1)

a. Vehicles, mobile equipment, and other non-intrinsically safe equipment present potential ignition sources. Consequently, SSI hot work in Class 1 areas requires the completion of a Hot Work Permit and the performance of air monitoring.

b. Air monitoring shall be performed for SSI hot work in Class 1 areas:

1) Before a vehicle or equipment that is not intrinsically safe can enter the Class 1 area, an authorized gas tester shall survey the area along its planned path to its destination.

2) The vehicle or equipment can proceed into the classified area only when flammability readings are 0 percent LEL, or less than 10 percent LEL with an implemented LEL mitigation plan.

c. Continuous air monitoring shall be performed if the vehicles engine or non-intrinsically safe equipment is running, and initial monitoring is greater than 0 percent LEL.

d. If the vehicle or non-intrinsically safe equipment is shut off, it shall not be restarted until the area around the vehicle or non-intrinsically safe equipment is surveyed for flammable gas.

e. The planned egress of the vehicle or equipment from the Class 1 area shall be surveyed for flammable gas prior to its departure from the area.

f. Periodic up to continuous air monitoring, as determined by Risk Management, shall be performed and documented.

F. Lower Explosive Limit Mitigation Plan

1. An LEL mitigation plan shall be developed and implemented if the presence of flammable gas is detected (LEL greater than 0 percent) at any time during the hot work.

2. The following information shall be documented on the mitigation plan:

   a. The percent of the LEL that was measured.

   b. The identified source(s) of the flammable gas within the hot work area.

   c. The controls, if any, that will be implemented to effectively reduce the flammability level to less than 10 percent of the LEL with the hot work area.

   d. The percent LEL measured after controls, if any, have been implemented.

3. If at any time the LEL reading is greater than or equal to 10 percent of the LEL, the hot work shall stop immediately and will not resume until controls are implemented to reduce the LEL level to less than 10 percent of the LEL.

G. Fire Watch

1. A fire watch is required whenever the hot work meets the following criteria, which are summarized in Appendix B:

   a. The hot work consists of PSI Class 1 hot work.

   b. The PSI hot work will be performed:

      1) Within 35’ of shielded combustible materials.

      2) Within 35’ radius of wall or floor openings that expose combustible materials.

      3) Adjacent to metal partitions, walls, ceilings, or roofs that are in contact with combustible materials on the other side and are likely to be ignited by conduction or radiation.

      4) Where fire alarms or suppression systems must be disabled.

2. Fire watch shall abide by the roles and responsibilities listed in Section III.D.

3. The fire watch shall always be in the ready position while hot work is performed and remain in the hot work area for at least 30 minutes after the hot work has ceased to detect and extinguish possible smoldering fires. Ready position consists of being attentive to the work being performed, properly positioning of fire extinguisher before work starts, always maintaining eyesight with hot work.

4. Fire watch shall stop the work if they deem that unsafe conditions have developed, or the work is exceeding the scope of the Hot Work Permit.

5. A second fire watch is required if one fire watch cannot directly observe combustible materials that could be ignited by the hot work operation.

VI. Ventilation

A. Mechanical ventilation, if it is deemed necessary, will consist of either general dilution systems or local exhaust systems.

B. General mechanical ventilation will be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fume and smoke within safe limits. Twenty (20) air changes per hour shall be achieved when welding.

C. Local exhaust ventilation shall be used when toxic metals are generated and used in addition to any general mechanical ventilation provided.

D. Local exhaust ventilation will consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system will be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits.

E. Contaminated air exhausted from a working space will be discharged into the open air or otherwise clear of the source of intake air. All makeup air will be clean and suitable for breathing. The contaminated air from the operation must be ventilated to a safe area where employees will not be exposed to the contaminants.

F. Oxygen will not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area.

G. Ventilation plans shall be prepared for primary source ignition hot work in non-designated areas or if a LEL Mitigation Plan is required. The ventilation plan shall be prepared by the hot work operator with approval by Risk Management. Ventilation is required to reduce atmospheric hazards to within acceptable levels.

H. Mechanical ventilation for indoor operations shall provide a local exhaust system that is effective at removing the welding fumes to a safe location.

I. Welding or cutting operations involving metals coated with lead-containing paint, stainless steel, and other impurities, must have adequate ventilation and hot work operators must wear adequate respirator protection. Respiratory protection is not required if sufficient quantitative industrial hygiene data suggests employees are not subjected to exposure when conducted using effective engineering and administrative controls. Respirators must be selected and used according to OC San's written respiratory protection program.

J. Ventilation equipment that is damaged shall immediately be removed from service.

VII. Designated Areas

A. A specific location designed and approved for hot work operations and the location must be maintained fire safe.

B. Area should be made of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitable segregated from adjacent hazards.

C. Risk Management must approve the area as a designated hot work area.

D. Designated hot work areas do not require a hot work permit. The approved list of designated hot work areas is provided in Appendix D.

VIII. Hazardous Area Classification

A. All areas designated as hazardous (classified) locations shall be documented and available to those authorized to design, install, inspect, maintain, or operate electric equipment at the location. Area Classification maps have been established for all facilities and are located on OC San intranet site.

B. OC San will refer to NFPA 820 for Fire Protection in Wastewater Treatment and Collection Facilities when classifying work areas.

C. Equipment and associated wiring approved as intrinsically safe shall be permitted in any classified location for which it is approved. Intrinsically safe equipment and wiring shall not be capable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture in its most easily ignited concentration. Abnormal conditions shall include accidental damage to any field-installed wiring, failure of electrical components, application of over-voltage, adjustment and maintenance operations, and other similar conditions.

IX. Oxy-Fuel Welding and Cutting

A. Fuel-gas hoses and oxygen hoses shall be distinguishable from each other. Oxygen and fuel-gas hoses shall not be interchangeable.

B. Gas hoses shall be inspected at the beginning of each work shift. Defective hoses shall be removed from service.

C. Equipment tips (torch/welders) shall be cleaned with approved cleaning wires, drills, or other devices designed for this purpose.

D. Torches shall be inspected at the beginning of each work shift for leaking shutoff valves, damaged hose couplings, and clogged tip connection. Defective torches will not be used.

E. Torches shall be ignited by friction lighters or other approved devices only. Matches, flame lighters, or hot work will not be used to ignite a torch.

F. Oxygen and fuel-gas pressure regulators, including related gauges, shall be in proper working order and equipped with flashback arrestors attached to the gauges. NOTE: Flashback arresters are in addition to backflow devices.

G. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and will not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces or greasy clothes or used within a fuel oil or other storage tank or vessel.

H. Torches and hoses shall be completely depressurized (bled) of pressurized gas, prior to storage, or at the end of each shift.

I. Torches and hoses shall not be stored in enclosed areas (e.g., gang boxes, lockers) while connected to cylinders and gauges will be removed at the end of shift.

X. Arc Welding and Cutting Safety

A. Electrode holders which are designed for arc welding/cutting and are capable of safely handling the maximum rate current required shall be used.

B. Cables shall be insulated and flexible, capable of handling the maximum current requirements of the work.

C. Only cables free from repair or splices for a minimum distance of 10 feet from the electrode holder shall be used. Cables with standard insulated connectors or splices with insulating quality that is equal to that of the cable are permitted.

D. To avoid the possibility of electric shock, electrode holders shall not be dipped in water.

E. When the arc welder or cutter leaves work, stops work for any length of time, or when the arc welding cutting machine is to be moved, the power supply to the equipment will be turned off.

F. Any faulty or defective equipment will be reported to the supervisor and tagged out of service until repaired.

G. All arc welding/cutting operations will be shielded by noncombustible or flameproof screens to protect employees and other persons working in the vicinity from the direct ray of the arc.

XI. Compressed Gas Cylinders Storage and Handling

A. Cylinders shall be legibly marked with either the chemical or trade name of the gas. Such markings will be stenciled, stamped, or labeled and will not be easily removable. The marking will be located on the shoulder of the cylinder.

B. Cylinders will be equipped with approved connections.

C. Acetylene cylinders will be stored and used valve end up.

D. Cylinders will be stored in an upright and secure position with caps installed and separated from fuel-gas cylinders or combustible materials (especially oil or grease), by a minimum distance of 20 feet, or by a noncombustible barrier at least 5 feet high and having a fire resistance rating of at least one-half hour.

E. All empty gas cylinders shall be returned to the proper storage area with caps intact, secured and placed in the storage compartment marked empty.

F. Cylinders shall not be dropped, struck by objects, or permitted to strike each other violently.

G. Cylinder valves shall be closed, and gauges removed before moving cylinders and at the end of the shift or when work is finished. Valves of empty cylinders will be closed.

H. Cylinders will be kept far enough away from the actual welding/cutting operation so that sparks, hot slag, or flames will not reach them.

I. Cylinder valves shall be opened slowly. Acetylene cylinder valves shall not be opened more than one and one-half turns of the valve stem and preferably no more than three-fourths of a turn.

J. Where a special wrench is required to operate a cylinder valve, it will be left in position on the stem of the valve while the cylinder is in use. In the case of manifolded or coupled cylinders, at least one such wrench will be available for immediate use.

K. Regulators will be removed, valve caps in place, and valves closed when cylinders are transported by vehicles. All vehicles used to transport cylinders will have a proper support rack installed.

L. A suitable cylinder truck, chain, or other steadying device will be used to prevent cylinders from being knocked over while in use or storage.

M. Cylinders will not be placed where they may become part of an electric circuit. Tapping of an electrode against a cylinder to strike an arc is prohibited.

N. Oxygen and acetylene cylinders shall have approved regulators and shall be equipped with flash back arrestors.

XII. Welding and Cutting on Containers

A. No hot work shall be performed on empty drums, barrels, tanks, or other containers until they have been thoroughly cleaned. This is to ensure that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which, when subjected to heat, might produce a hazard. Any connection to the drum or vessel will be disconnected or blanked off.

B. All hollow spaces, vacancies, or containers will be ventilated to remove gases before preheating, cutting, or welding. Purging with inert gas is recommended. Purging plans must be submitted and approved by Risk Management or Engineer.

C. When Hot Work is to be performed on tanks, lines, or other equipment associated pipes, lines, or other connections, isolations shall consist of a double block and bleed valve system or blanked/blinded to assure complete isolation of the Hot Work area from combustible gases.

D. When possible, objects to be welded, cut, or heated will be moved to a designated hot work area. If this is not possible, all movable fire hazards in the workspace will be taken away to a safe place.

E. If the object to be welded, cut, or heated cannot be moved and all fire hazards cannot be removed (e.g., equipment, walls, floors, etc.), positive means will be taken to confine the heat, sparks, and slag to protect the immovable fire hazards as well as opposite sides.

F. No welding, cutting, or heating will be done where the application of flammable paint, the presence of other flammable compounds, or heavy dust concentrations create a possible hazard.

G. Welding or cutting work shall not be held or supported on compressed gas cylinders or containers.

XIII. Flammable Liquids

A. Flammable liquids shall be stored in specially approved and designated cabinets, storage rooms, or outbuildings.

B. Use of only manufacturer's original containers or U. L. approved flammable liquid containers.

C. Proper handling and dispensing procedures to include grounding, quantity limits, and pressure relief, and personal protective equipment.

D. Flammable and combustible cabinets shall be made of at least 18-gauge sheet iron and double walled with one and one-half inch airspace. Doors must have three-point latch and be self-closing.

E. Quantity of liquid stored in a cabinet shall not exceed:

1. 25 gallons of Category 1 liquids in containers

2. 120 gallons of Category 2, 3, or 4 liquids in containers

3. 660 gallons of Category 2, 3, or 4 liquids in a single portable tank

F. Only use flammable liquids in well-ventilated areas and away from ignition sources.

G. Containers shall be labeled in accordance with Hazardous Communication Program.

H. Storage cabinets - Not more than 120 gallons of Category 1, 2, 3 and 4 flammable liquids may be stored in a storage cabinet. Of this total, not more than 60 gallons may be of Category 1, 2 and 3 flammable liquids. Not more than three such cabinets may be in a single fire area, except that in an industrial occupancy additional cabinet may be in the same fire area if the additional cabinet, or group of not more than three cabinets, is separated from any other cabinets or group of cabinets by at least 100 feet

XIV. Flammable Gases

A. All storage and handling procedures for specific flammable gases and operations will be strictly observed.

B. Flammable gases will be stored separately from oxygen or other oxidizers. Only exception will be one oxygen cylinder in use on an acetylene welding cart.

C. Unless the cylinder valve is protected by a recess in the head, keep the metal cap in place to protect the valve when the cylinder is not connected for use.

D. Do not use a cylinder of compressed gas without a pressure reducing regulator attached to the cylinder valve, except where cylinders are attached to a manifold, in which case the regulator will be attached to the manifold header.

E. Use regulators and pressure gauges only with gases for which they are designated and intended.

F. Never bring cylinders into tanks, unventilated rooms, or other closed quarters.

G. Cylinder valves shall be kept in a closed position when work is completed.

XV. Personal Protective Equipment

A. Selection and use of personal protective equipment will comply with Personal Protective Equipment Program.

B. Eye and Face Protection

1. Welding helmets and hand shields will be used during all arc welding/ cutting operations, excluding submerged arc welding. Cutting/welding goggles will also be worn during arc welding/cutting operations. The goggles or glasses may be either clear or colored glass, depending on the type of exposure in welding operations. Helpers or attendants will wear proper eye protection.

2. Safety goggles or other approved eye/face protection are for use during gas welding operations on light work, torch brazing, or inspection.

3. All operators and attendants on resistance welding or brazing equipment will use face shields or goggles, depending on the job.

C. Protective Clothing

1. Except when engaged in light work, all welders will wear flameproof gauntlet gloves.

2. Flameproof aprons made of leather, or other suitable material, may also be desirable for protection against radiated heat and sparks.

3. Woolen clothing will be worn in preference to cotton because it is not so readily ignited. Nylon clothing is not permitted for welding/cutting operations. All outer clothing, such as jumpers or overalls, will be reasonably free from oil or grease.

4. Clothing shall be selected to protect the welder from ignition, burning, trapping hot sparks, or electric shock.

D. Respiratory Protective Equipment

1. Respiratory protective devices will be required when one or more of the following conditions exist:

   a. Feasible engineering controls are insufficient to mitigate the hazards.

   b. Room size (with special regard to ceiling height) is limited, or welding/cutting work is extensive, and ventilation is limited.

c. Several welders are working in the area at the same time.

d. Potentially unsafe atmospheric conditions exist.

e. Too much heat is generated.

f. Hazardous fumes, gases, or dusts of toxic metals, particularly lead, cadmium, chrome, beryllium, and zinc are present in the base metal or in coatings.

2. Respiratory protective equipment will be selected, used, and maintained in accordance with Respiratory Protection Program.

XVI. Smoking

A. The State of California prohibits smoking within 20 feet of the entrance to a building.

B. Smoking shall be restricted to designated smoking areas only. Smoking areas are provided with appropriate non-combustible ashtrays and will be emptied at appropriate frequencies by janitorial staff.

C. Designated smoking area maps are provided in the OCS Map Library.

XVII. Fire Extinguishers

A. Employees assigned to conduct portable fire extinguisher monthly visual inspections are responsible for seeing that the following inspection procedures are followed:

1. No obstruction to access or visibility.

2. Pressure gauge reading indicates the needle point is in the green.

3. Operating instructions on nameplates are legible and face outward.

4. Safety seals and tamper indicators are not broken or missing.

5. Examination for obvious physical damage, corrosion, leakage, or clogged nozzle.

6. Fire extinguishers shall be replaced if deficiencies are found.

B. Extinguishers used for hot work shall be appropriately sized for the type of work being performed.

C. The extinguisher shall be available and ready to use.

XVIII. Training

Classified Location Awareness - This short course is for all personnel except office staff that does not enter process areas. The course should review the contents of this policy.

Working in Hazardous Locations (Hot Work) - This course should cover use of non-sparking tools, hot work permits, any specialized personal protective equipment, and use of atmospheric monitors.

Atmospheric Monitors - This course is already taught in the OC San Training curriculum. Implementation of this policy may require additional personnel to be trained in the use of Atmospheric Monitors.

XIX. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XX. References

Cal OSHA, Title 8, California Code of Regulations (CCR), Subchapter 5, Group 1, Article 59, Hazardous (Classified) Locations

Cal OSHA, Title 8, CCR, Subchapter 5, Group 2, Article 34, Hazardous (Classified) Locations

Cal OSHA Title 8, CCR, Subchapter 7, Group 10, Gas Systems for Welding and Cutting

Cal OSHA Title 8, CCR, Subchapter 7, Group 11, Electric Welding

Cal OSHA Title 8, CCR, Subchapter 7, Group 20, Flammable Liquids, Gases and Vapors

Cal OSHA Title 8, CCR, Subchapter 7, Group 27, Fire Protection

NFPA 51B, Standard for Fire Prevention During Welding, Cutting and Other Hot Work

NFPA 70E, Electrical Safety in the Workplace

NFPA 497, Recommended Practice for the Classification of Flammable Liquids, Gases or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas

NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities.

XXI. Revision History

Version	Date	By	Reason
1.0	07/09/2009	Huynh, Cindy	New
2.0	06/07/2012	Shephard, Adam	Periodic Update
3.0	08/28/2020	Frattali, John	Periodic Update – Refer to Program Change Log
4.0	12/07/2021	Spencer, Case	Periodic Update – Refer to Program Change Log

XXII. Appendices

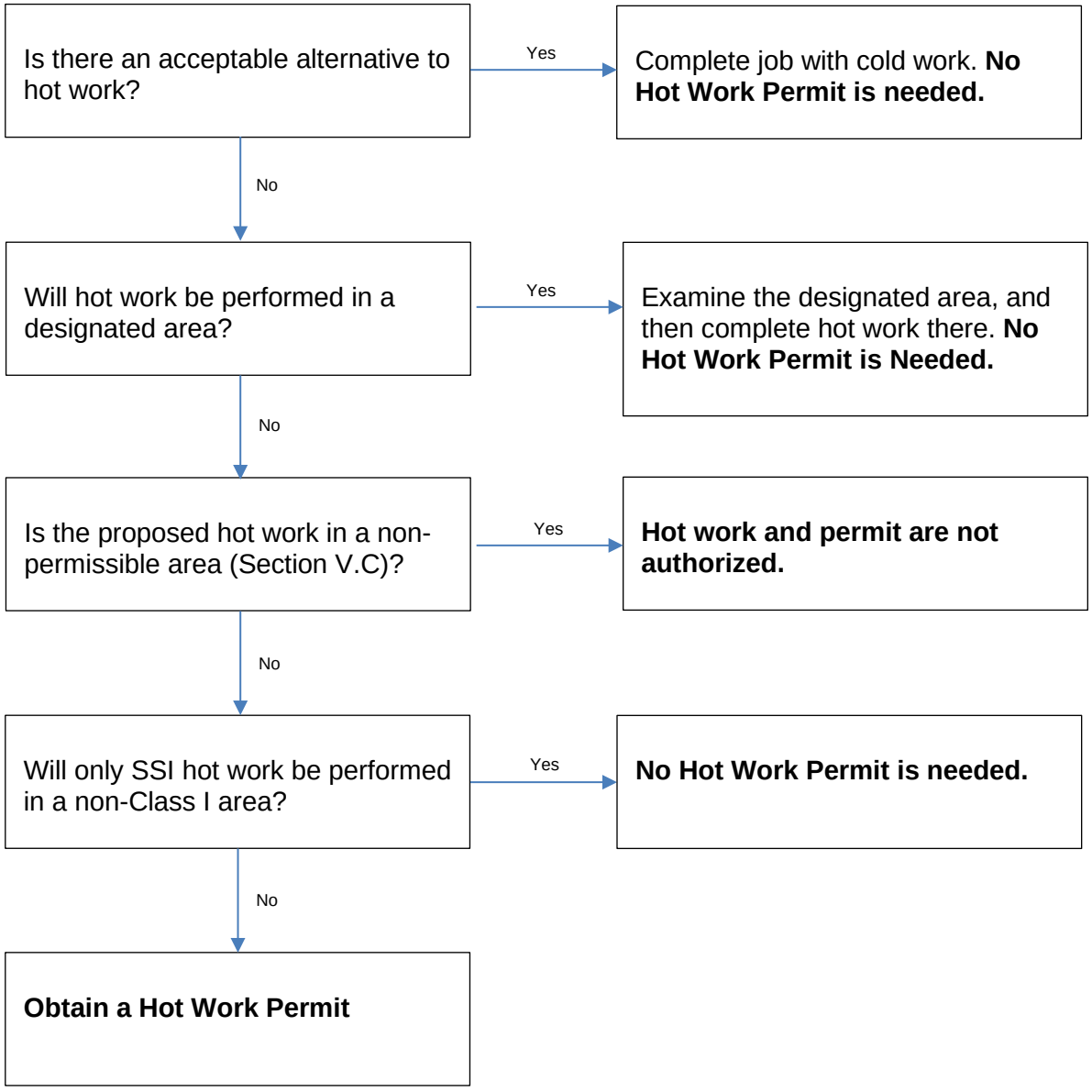
A. Hot Work Permit Applicability

B. Situations Requiring a Fire Watch

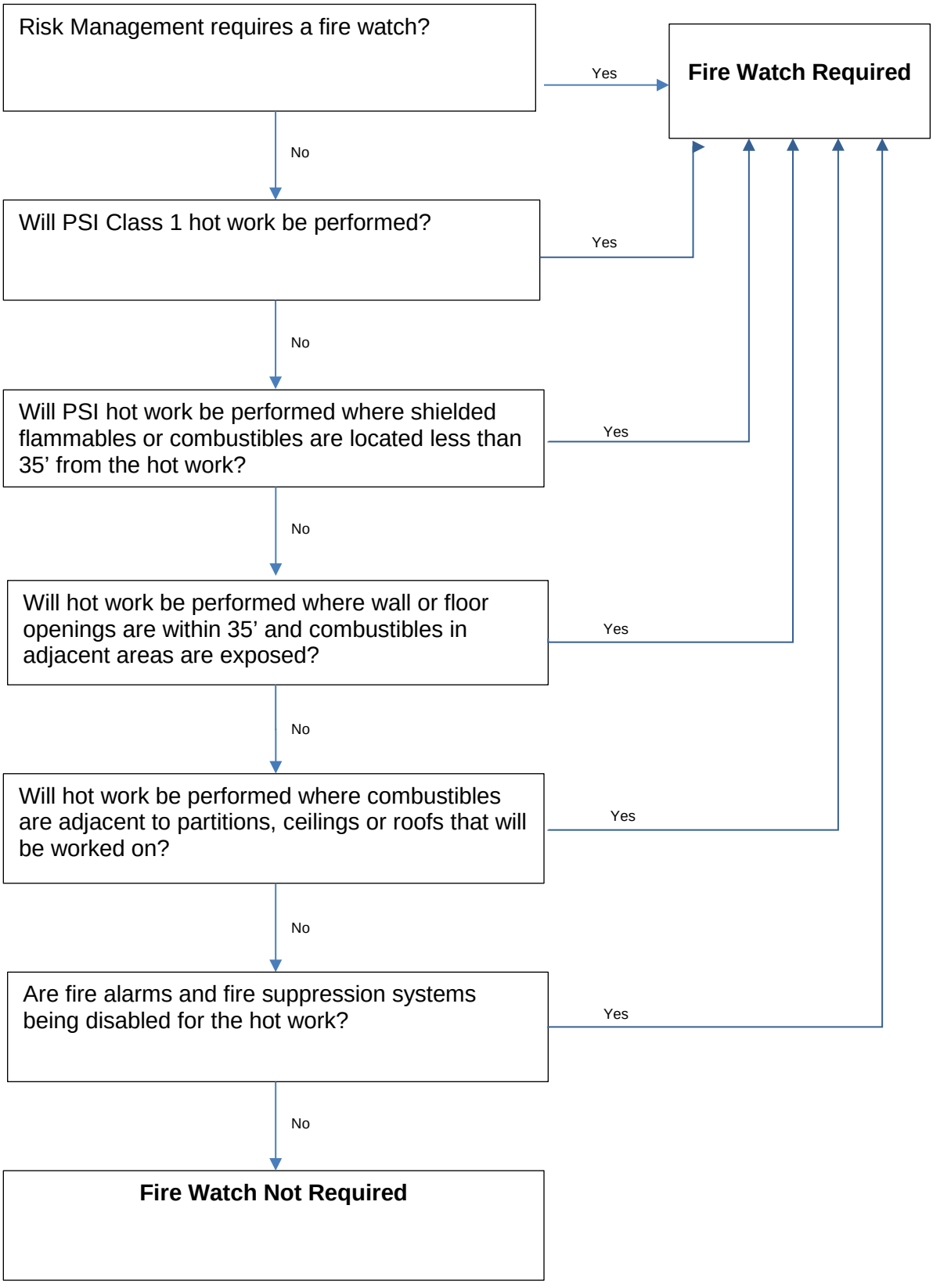
C. Hot Work Air Monitoring Requirements

D. Designated Hot Work Areas

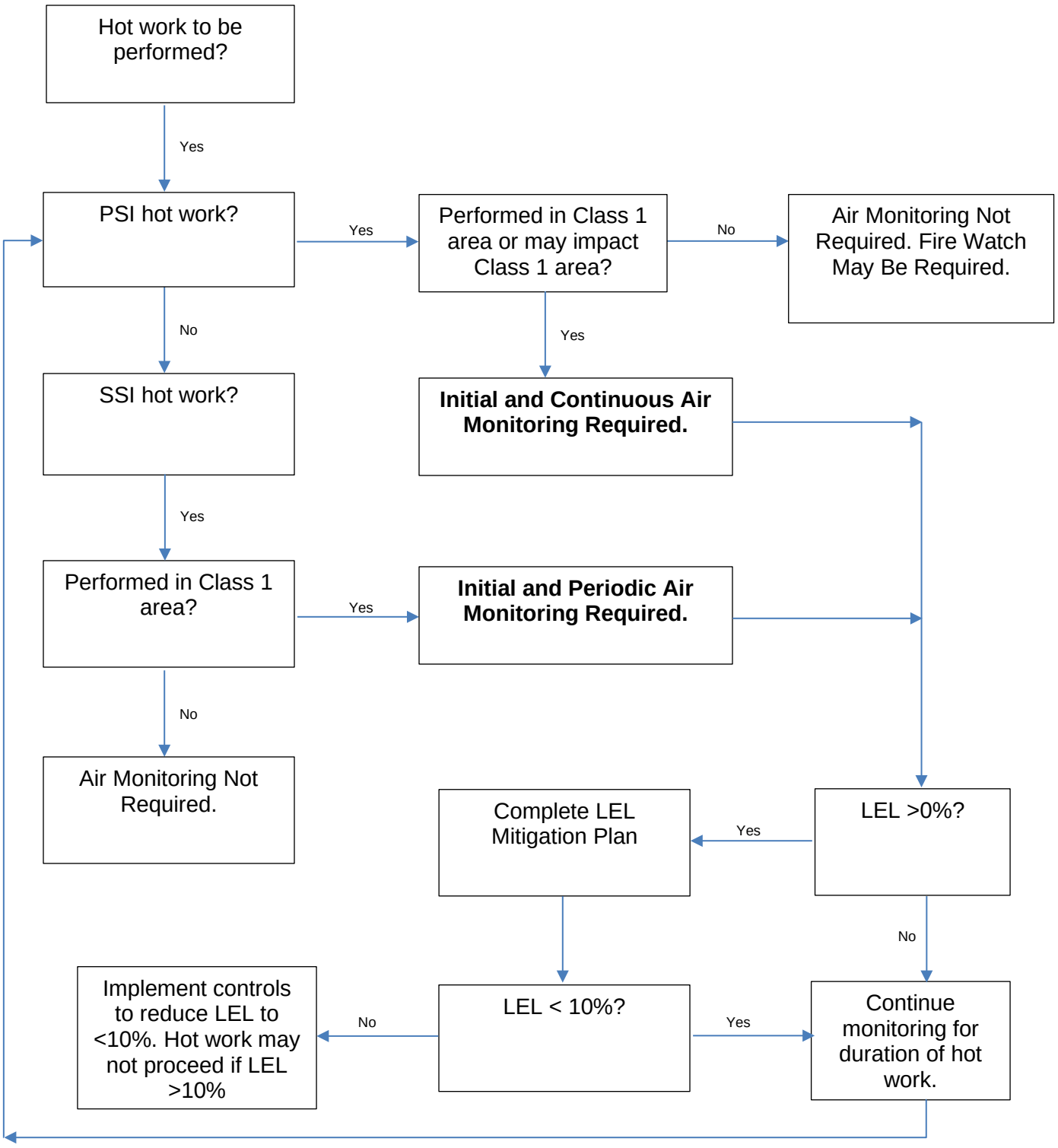
Appendix A – Hot Work Permit Applicability



Appendix B – Situations Requiring Fire Watch



Appendix C – Hot Work Air Monitoring Requirements



Appendix D – Designated Hot Work Areas

Plant 1
Building B (Rebuild Shop)
Central Power Generation Building – Maintenance Bay

Plant 2
Central Power Generation Building – Maintenance Bay

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-120 (Ver. 3) Machine Safeguarding
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of this program is to protect Orange County Sanitation District (OC San) staff and contractors from point of operation, power transmission, and other moving part hazards associated with machines, equipment, and tools.

It is the policy of OC San to protect all employees from occupational injuries through implementation of feasible engineering controls and enforcing safe work practices.

This program outlines responsibilities for OC San employees and contractors operating or inspecting process equipment and/or machine tools, as well as safeguarding design requirements. All employees are required to follow the minimum procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Risk Management Division.

II. Background

This procedure applies to all work performed at the OC San treatment plants, pump stations and the collection system. All machines consist of the following fundamental areas that require safeguarding:

1. Point of Operation – Area where material is positioned, inserted, or manipulated, or where work is performed on the material, such as cutting, shaping, boring, or forming of stock.
2. Power Transmission Apparatus – All components of the mechanical system which transmit energy to the part of the machine performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.
3. Other Moving Parts – All parts of the machine which move while the machine is working including, but not limited to, reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.
4. Operating Controls – A mechanical or electrical power control provided to make it possible for the operator to cut off power without leaving position at the point of operation.

Each machine will require a different level of safeguarding, which is based on physical characteristics and human involvement. Safeguarding will consist of guards, devices, personal protective equipment, lockout/tagout, maintenance and training.

District staff and contractors shall not operate any machine, equipment, or tools without approved safeguards in place. Machine safeguards shall not be modified without prior approval from Risk Management. The safeguards shall not be removed, except where hazardous energy has been controlled in accordance with the OC San Control of Hazardous Energy Program (SOP-605).

III. Definitions

Acceptable Risk – A risk level achieved after risk reduction measures have been applied.

Accidental Contact – Inadvertent physical contact with power transmission equipment, prime movers, machines, or machine parts which could result from slipping, falling, sliding, tripping or any other unplanned action or movement.

Adjustable Guard - A guard with provisions for adjustment to accommodate various jobs, tooling setups or material flow.

Affected Person – An individual who operates, services and/or maintains a machine, or others who are in proximity to a machine.

Authorized Person – Qualified personnel identified by the employer or supplier to perform a specific task.

Belts – All power transmission belts, such as flat belts, round belts, V-belts, etc., unless otherwise specified.

Belt Pole (sometimes called a Belt Shipper or Shipper Pole) – a device used in shifting belts on and off fixed pulleys on line or countershaft where there are no loose pulleys.

Belt Shifter – a device for mechanically shifting belts.

Control Reliability – The capability of the system, safeguarding, other control components and related interfacing to achieve a predetermined safe state in the event of a failure within their safety-related functions.

Conveyor – A device designed exclusively for transporting bulk materials, packages, or objects in a predetermined path and having fixed or selective points of loading or discharge.

Danger Zone – Any place in or about a machine or piece of equipment where an employee may be struck by or caught between moving parts, caught between moving and stationary objects or parts of the machine, caught between the material and a moving part of the machine, burned by hot surfaces, or exposed to electric shock.

Emergency Stop - A control that, when actuated, initiates immediate or controlled stopping action of hazardous motion of the manufacturing system, process, or cell. Reference NFPA 79 for explanation of the categories of emergency stops.

Enclosed – The moving parts are so guarded that physical contact by parts of the body is precluded. This does not prohibit the use of hinged, sliding or otherwise removable doors or sections to permit inspection or lubrication.

Fencing - Guarding by means of a fence, which restricts access to the machine. Guarding by fencing and location guards shall be designed to prevent contact with the hazardous equipment when reaching around, under, through or over the barrier.

Flywheel (sometimes referred to as a balance wheel or flywheel pulley) – a heavy wheel which by its inertia provides uniform energy of machinery by resisting sudden changes of speed.

Fixed Barrier Guard - A guard affixed to a fixed surface in such a manner to enclose all or part of hazard zone.

Guarded – Shielded, fenced, enclosed, or otherwise protected by means of a suitable enclosure guard, cover, casing guard, trough guard, shield guard, standard railing or by nature of the location where permitted, to remove the hazard from accidental contact.

Guarding by Location – The moving parts are located by their remoteness from floor, platform, walkway, or other working level, by their location with reference to the frame, foundation, or structure as to remove the likelihood of accidental contact.

Hazardous Parts of Machinery - Any machine, part of a machine or any projectile from a machine, capable of crushing, puncturing, severing, burning, breaking, or otherwise injuring any body part. Hazards include (1) point of operation hazards where work is performed on material such as cutting, shaping, boring, or forming; (2) all components of mechanical, hydraulic, pneumatic, or electrical systems, which transmit energy to the machine allowing it to perform work; and (3) and hazards associated with conductors, contacts, relays, flywheels, pulleys, belts, chains, rods, couplings, cams, spindles, gears, noise, vibration and projectiles.

Hazard Zone - An area or space in which immediate or impending hazards exist. It can also be defined as an area enclosed by fencing or barrier guarding.

In-Running (Ingoing) Nip Point – Any location where a part of the body could be drawn in and injured, between a rotating machine member and another rotating or fixed member, and the material.

Interlock – A series of sensors, software, relays and other machine control-logic and components that collectively monitor the status of a machine’s hazardous locations / operations and prevent unsafe-starting, or may stop or safely shut-down, a machine when any interlock-component or control-logic is violated or not in a proper / safe condition.

Interlocked Barrier Guard – A movable barrier or section of a barrier with a safety interlock switch to either prevent entry into a hazard area or interrupt the electric circuit and stop the equipment.

Jog (Mode) – An intermittent motion imparted to the momentary operation of the drive motor.

Local Control – A mode that provides the operator with direct control of machines and related equipment or cells within the machinery system.

Lockout Tagout (LOTO) – is a broad term describing the use of procedures, techniques, designs, and methods to protect personnel from injury due to inadvertent release of hazardous energy. LOTO is commonly called the control of hazardous energy.

Machine – the driver unit as distinguisher from the driving unit which is defined as a prime mover.

Machine Guarding – Device or devices which effectively prevent personnel, contractors, subcontractors, contracted services, or visitors from physical harm due to contact with any hazard present at any machine.

Machine Parts – all moving parts of the machine, except those forming part of the point of operation.

Momentary Contact Device – a device which requires constant pressure by the operator to operate the machine.

Nip Point – Any location where a part of the body could be drawn in and injured, between a rotating machine member and another rotating or fixed member, and the material.

Operator Station – The complete complement of controls used by or available to an operator on a given operation.

Pinch Point – Any point other than the point of operation at which it is possible for a part of the body to be caught between the moving parts of a machine or between moving and stationary parts of a machine.

Point of Operation – The area on a machine where materials are positioned for processing or change by the machine, and where work is being performed on the material. A machine may have more than one point of operation.

Power Operated Presses – Includes all mechanically powered machines that shear, punch, form or assemble metal or other material by means of tools or dies attached to or actuated by slides, commonly referred to as punch presses, press breaks, hydraulic power presses, and rivet setting machines.

Presence Sensing Device – A device designed, constructed, and arranged to create a sensing field or area that signals the clutch and brake control when any part of the operator's body or hand tool is within such field or area.

Prime Mover – An engine or motor whose main function is to drive or operate other mechanical equipment.

Programmable Logic Controller (PLC) – An electronic system that performs logical, decision-making, or arithmetic functions by executing programmed instructions.

Safeguarding – Protection of personnel from hazards using guards, safeguarding devices, awareness devices, and safeguarding methods. To determine if safeguarding is effective, an operator should be prevented from contacting a hazard by going around, under, through or over the safeguard.

Safeguarding Device – a device that provides protection from hazard(s) by preventing or detecting exposure in the danger zone.

Safeguarding Method – Safety guarding implemented to protect individuals from hazards by the physical arrangement of distance, holding, openings, or positioning of the machine or machinery systems to ensure that the hazard cannot be reached.

Safe Work Procedure – Formal written documentation developed by the user that describes steps to be taken to safely complete tasks where hazardous situations may be present to hazardous events are likely to occur.

Safety Block – A prop that is inserted between opposing tooling or machine members to prevent closing of machine members or tooling components.

Safety Distance – The distance a safeguard is installed from a hazard such that individuals are not exposed to the hazard.

Shear Point – A hazard area created by a reciprocal (sliding) movement of a mechanical component past a stationary point on a machine.

Sheaves – Grooved pulleys, unless used as a flywheel.

Stop Control – An operator control designed to immediately deactivate the clutch control and activate the brake to stop slide motion.

Tail Rod – the extension of the piston rod passing through a stuffing box in the outside head of an engine cylinder, compressor cylinder or pump cylinder.

Unexpected Start – Any start-up which, because of its unexpected nature, generates a risk to individuals.

Zero Access – When a machine is guarded so hands, arms, fingers, or other body parts cannot contact a hazard.

IV. Responsibilities

A. Risk Management

Risk Management is responsible for:

- Providing technical assistance for determination of required safeguarding for specific machines, equipment, or tools.
- Providing training and technical assistance for design, use, implementation, and removal of machine guards.
- Providing machine guard training to affected District staff.
- Reviewing and updating this program for overall effectiveness on an annual basis.
- Communicating machine guard requirements to OC San staff and contractors through written memos, SAFE bulletins, tailgate meetings, training, and posting of this program.
- Investigating near misses and injuries related to machine safeguarding.

B. Management

Management is responsible for providing equipment and resources necessary to implement this program, and for ensuring that the following provisions are being met:

- Ensure all machinery is properly safeguarded.
- Ensure new purchased equipment meets the machine safeguard requirements prior to use.
- Implement engineering controls as deemed necessary.
- Seek approval from Risk Management for alternative guarding methods.
- Train employees on process-specific machine safeguards.
- Monitor and inspect to ensure machine safeguards remain in place and function.
- Ensure those employees who need to remove or bypass a safeguard attend lockout/tagout training.
- Ensure all tagged “out of service” tools/equipment are replaced appropriately.
- Identifying equipment that needs machine safeguarding and submit a request to have the equipment guarded.
- Equipment that needs safeguarding will be taken out of service until a safeguard can be properly placed.

C. Employees

District staff and contractors working around or using equipment with moving parts are responsible for:

- Operating machines with all safeguards in place and follow all applicable safety requirements (e.g., lockout/tagout).
- Replacing machine safeguards properly after maintenance.
- Reviewing the equipment manufacturer provisions for appropriate safeguards.
- Verifying safeguarding devices are in place and functional before using the equipment.
- Reporting missing or worn guards to supervisors.
- Reporting near misses or incidents to supervisors in a timely manner.
- Participating in all required training.

V. Hazards

Machines generate hazardous motions and actions which can cause injury or death. The basic types of hazardous mechanical motions and actions are listed below.

A. Rotating Motion

Injury with rotating parts can be severe. Speed is not a factor in determining if the motion can cause injury. Even slow-moving parts can grip hair, clothing, body parts or tooling. Rotating motion is common in collars, couplings, cams, clutches, flywheels, shaft ends, spindles, gears, and horizontal or vertical shafting. Risk increases when projections, such as set screws, bolts, nicks, abrasions, and projecting keys, are exposed on the rotating parts.

B. Nip Point Hazards

Nip point hazards are caused by rotating parts on machines. Nip points can exist where parts rotate in opposite direction where axes are parallel to each other (e.g., belt press roller). Nip points can also exist between rotating and perpendicular moving parts (e.g., point between a belt and its pulley). Nip points may also occur between rotating and fixed parts that create a shearing, crushing or abrading action (e.g., screw conveyor).

C. Reciprocating Motion

Reciprocating motions occur during a back-and-forth or up-and-down motion where a worker may be struck or caught between a moving and stationary object.

D. Transverse Motion

Transverse motion (movement in a continuous straight line) is hazardous because workers can be struck or caught in a pinch or shear point by the moving part. One example of a transverse motion is a belt on a pulley system.

E. Cutting

Cutting actions involve rotating, reciprocating, or transverse motion. The danger of cutting action exists at the point of operation where fingers, arms or body injuries can occur and where flying chips or scrap metals can cause additional injuries. Mechanisms involving cutting hazards, include but are not limited to, bandsaws, circular saws, boring and drilling machines, lathes, and mills.

F. Punching

Punching actions are a result of power applied to a slide from the purpose of blanking, drawing, or stamping metal or other materials. This action occurs at the point of operation where stock is inserted, held, or withdrawn by hand.

G. Shearing

Shearing action involves trimming or shearing metal or other materials by applying a power slide or knife. This hazard occurs at the point of operation where stock is inserted, held, or withdrawn. Shearing is typical of mechanical, hydraulic, or pneumatic powered shears.

H. Bending

Bending action results where power is applied to a slide to draw or stamp metal or other materials. This is typical for power presses, press brakes and tube benders. The hazard occurs at the point of operation where stock is inserted, held, and withdrawn.

Note: This list is not exhaustive. Other machine hazards include such categories as compressed gases, hydraulic fluids, counterweights, etc.

VI. Safeguarding Types

Machine safeguarding must prevent hands, arms, and other body parts of a worker from contacting dangerous moving parts. The safeguards should not be easily removed and should

be made of durable material that will withstand conditions of normal use. The safeguards must be firmly secured to the machine.

Safeguards must be placed on machines to protect equipment operator(s) and other employees in the area from hazards such as those created by the point of operation, in-going nip points, rotating parts, moving belts, cutting teeth, flying chips/sparks, and any parts that impact or shear.

Machines can be safeguarded by adding a guard, safety device, guarded by location and distance, or combination thereof.

A. Guards

Guards are barriers that prevent physical access to the danger areas. There are four general types of guards:

- Fixed – A fixed guard is a permanent part of the machine and is not dependent upon moving parts to function. The fixed guard may be constructed of sheet metal, screen, wire cloth, bars, plastic, or any other material that is substantial enough to withstand whatever impact it may receive and to endure prolonged use.
- Interlocked - When this type of guard is opened or removed, the tripping mechanism and/or power automatically shuts off or disengages, the moving parts of the machine are stopped, and the machine cannot cycle or be started until the guard is back in place. An interlocked guard may use electrical, mechanical, hydraulic, or pneumatic power or combination thereof. Interlocks should not prevent “inching” by remote control if required. Replacing the guard should not automatically restart the machine.
- Adjustable – This type of guard is adjustable and protects the operator by placing a barrier between dangerous areas and the operator. These guards are flexible and allow for various sizes of material to be fed into the machine.
- Self-Adjusting – The openings of these guards are determined by the movement of the material being fed into the machine. As an operator moves material into the danger area, the guard is pushed away, providing an opening which is only large enough to admit the material. After the material is removed, the guard returns to the rest or closed position. The guards may be constructed of plastic, metal, and other substantial material. The guard protects the operator by placing a barrier between the danger area and the operator.

B. Safety Devices

Safety devices may be installed to replace or supplement guards. Safety devices may perform one of the following functions:

- Stop the equipment if a hand or any part of the body is inadvertently placed into equipment.
- Restrain or withdraw the operator's hands during operation.
- Require the operator to use both hands-on equipment controls.
- Provide a barrier which is synchronized with the operating cycle of the equipment to prevent entry during the hazardous part of the cycle.

Safety devices may include the following:

- Presence-Sensing Devices
    1. Photoelectric (light curtain) – this device uses a system of light sources and controls which can interrupt the machines cycle. This device is a type of presence-sensing device. If the light field is broken, the machine stops and will not cycle. This device must be used only on machines which can be stopped before the worker can reach the danger area. The design and placement depend on time required to stop the mechanism and speed of the employee across the danger zone.
    2. Radiofrequency – this device uses radio beam that is part of the machine control circuit. This device is a type of presence-sensing device. When the capacitance field is broken, the machine will stop or will not activate. Like photoelectric devices, this device shall only be used on machines which can be stopped before the worker can reach the danger zone. This requires the machine to have a friction clutch or other means of stopping.
    3. Electromechanical – this device has a probe or contact bar which descends to a predetermined distance when the operator starts the machine cycle. If there is an obstruction preventing it from descending its full distance, the control circuit does not actuate the machine cycle. This device is a type of presence-sensing device.
- Pullback – this device utilizes a series of cables attached to the operator's hands, wrists, or arms. The device is primarily used on machines with a stroking action. When the slide/ram is between up cycles, the operator can access the point of operation. When the slide/ram begins to cycle by starting its descent, a mechanical linkage automatically assures withdrawal of the hands from the point of operation.
- Restraint (holdback) – this device utilizes cables or straps that are attached to the operator's hands and a fixed point. The cables or straps must be adjusted to let the operator's hands travel with a predetermined safe area. There is no extending or retracting action involved. Hand-feeding tools may be necessary if the operation involves placing material into the danger zone.
- Safety Trip Controls – these devices provide a quick means for deactivating the equipment in an emergency. A pressure-sensitive body bar, when depressed, will deactivate the machine. If the operator or anyone trips, loses balance, or is drawn toward the machine, applying pressure to the bar will stop the operation. The positioning of the bar, therefore, is critical. It must stop the machine before a part of the employee's body reaches the danger zone.
- Two-Hand Control – this device requires constant, concurrent pressure by the operator to activate the machine. This kind of control requires a part-revolution clutch, brake and brake monitor if used on power press. For this device, the operator's hands are required to be at a safe location (on control buttons) and at a safe distance from the danger area where the machine completes its cycle.
- Two-Hand Trip – this device requires concurrent application of both operator's control buttons to activate the machine cycle, after which the hands are free. This device is typically used on machines equipped with full-revolution clutches. The trips must be placed far enough from the point of operation to make it impossible for the operator to move their hands from the trip buttons or handles to the point of operation.
- Gates – this is a moveable barrier that protects the operator at the point of operation before the equipment can be started. Gates are designed to be operated with each machine cycle. The gate must be interlocked so that the machine will not start its cycle

unless the guard is in place. It must be in the closed position before the machine can function.

C. Guarded by Location or Distance

Dangerous moving parts of a machine can be positioned so that those areas are not accessible or do not present a hazard to a worker during normal operation of the machine or equipment. This may be accomplished by locating a machine so that the hazardous parts of the machine are located away from operator workstations or areas where employees cannot walk or work.

Hazardous parts may be located seven feet or more above a floor or working level and be considered guarded, except where an employee may be required to work from an elevated location along the floor or working level, in which case the equipment shall be guarded or controlled using lockout/tagout methods.

VII. Equipment Inspections

Inspections shall be performed to verify safeguarding is in place and adequate. Each machine should be thoroughly inspected before each use. Machines that do not pass inspection shall be taken out of service. Equipment removed from service due to inadequate guarding is subject to OC San's Control of Hazardous Energy Program (SOP-605). Equipment can be returned to service after machine safeguarding deficiencies have been adequately addressed.

VIII. Equipment Maintenance

All equipment must be properly maintained per the manufacturer's or the equipment owner's requirements. All District employees and contractors shall comply with SOP-605 for shutting down equipment prior to removal or bypass of safeguards.

To prevent hazards while servicing machines, each machine or piece of equipment shall be safeguarded during the conduct of servicing or maintenance by:

1. Notifying all affected employees (usually machine or equipment operators or users) that the machine or equipment must be shut down to perform some maintenance or servicing.
2. Stopping the machine.
3. Isolating the machine or piece of equipment from its energy source.
4. Locking out or tagging out the energy source.
5. Relieving any stored or residual energy.
6. Verifying that the machine or equipment is isolated from the energy source.

When the servicing or maintenance is completed, there are specific steps which must be taken to return the machine or piece of equipment to service. These steps include:

1. Inspection of the machine or equipment to ensure that all guards and other safety devices are in place and functional.
2. Checking the area to ensure that energization and startup of the machine or equipment will not endanger employees.
3. Removal of the lockout devices.

4. Reenergization of the machine or equipment.
5. Notification of affected employees that the machine or equipment may be returned to service.

Machine design should permit routine lubrication and adjustment without removal of safeguards.

IX. Troubleshooting Equipment

To the extent feasible, equipment troubleshooting shall be performed in accordance with the Electrical Maintenance section of this program. If equipment operation is required with safeguards removed, equipment specific procedures shall be developed for identifying and controlling hazards. Temporary barriers shall be installed to prevent personnel from physically contacting the danger areas.

If it is necessary to lubricate or make tooling adjustments while the machine is running, special safeguarding equipment may be needed solely to protect the employee from exposure to hazardous moving parts. Maintenance personnel must know which machines can be serviced while running and which cannot. For example, the seal or packing gland of a pump can be adjusted while in operation. The danger of accident or injury is greatly reduced by shutting off and locking out all sources of energy.

X. Unauthorized Removal of Machine Safeguards

Employees are authorized to remove safeguards as permitted in the above sections for equipment maintenance or troubleshooting of equipment. Maintenance must replace the guards before the job is considered finished and the machine released from lockout.

Except where permitted in this section or where approved by Supervision and Risk Management, all other safeguard removal or defeat is deemed unauthorized. Management does not tolerate the unauthorized removal of machine safeguards. Any employee found to have removed a machine safeguard without Supervisor and Risk Management approval will be subject to disciplinary actions.

XI. Anchoring Fixed Machinery

Machines and equipment designed for use at a fixed location shall be securely anchored to prevent walking or moving. (i.e., drill press, pump, bench grinder).

XII. Automatic Restarting of Equipment

Machines or equipment, where injury to the operator might result if motor were to restart after power has been restored following a power failure, shall have anti-restart devices. The anti-restart devices shall be installed to prevent machines from automatically restarting upon restoration of power.

XIII. Emergency Stop Devices

Each machine that has the potential for pulling a person into it point of operation, nip point, or power transmission device shall be equipped with emergency stopping device.

The emergency stopping device shall be colored red and the background around the device shall be colored yellow. The emergency stopping device shall require the operator to manually reset the emergency stopping device once it has been pushed.

Emergency stop devices shall be designed to only be used in reaction to an incident or hazardous situation. These devices include buttons, rope pulls, cable pulls, or pressure sensitive body bars. These devices are not to detect or prevent employee exposure to the machine hazards, but rather initiate a stop action when they are activated by the employee.

XIV. Guard Design Requirements

Guards shall conform to the design and function of the machine or equipment. Guards must not create additional hazards and must be physically attached to the equipment where possible. If the guard cannot be attached, it must be positioned at distance from the machine or equipment that provides equivalent protection.

Guards shall meet the following general requirements:

- Prevent Contact – The safeguard shall prevent hands, arms, and any other part of a worker's body from contacting dangerous moving parts. An effective guard eliminates the possibility of the operator or another worker placing parts of their bodies near hazardous moving parts.
- Secure – Workers should not be able to easily remove or tamper with the safeguard but require a tool to remove them. Guards and safety devices shall be made of durable material that will withstand the conditions of normal use.
- Afford Protection from Falling Objects – The safeguard shall ensure that no objects can fall into moving parts. A small tool which is dropped into a cycling machine could easily become a projectile that could strike and injure someone.
- Create No New Hazards – A safeguard defeats its own purpose if it creates a hazard of its own such as a shear point, a jagged edge, or an unfinished surface which can cause a laceration. The edges of guards, for instance, should be rolled or bolted in such a way that they eliminate sharp edges.
- Create No Interference – Any safeguard which impedes a worker from performing the job quickly and comfortably might soon be overridden or disregarded. Proper safeguarding can enhance efficiency since it can relieve the worker's apprehensions about injury.
- Allow for Safe Lubrication and Adjustment – Where lubrication or other such tooling adjustments are required, the guard should be designed so that the entire guard allows for such task or equipment parts requiring maintenance be relocated outside the guarded area. For example, locating oil reservoirs to outside the guard with a line leading to the lubrication point, will reduce need for employee to work in a danger zone.
- Generally, install machine guards on all openings of ¼ inch or greater. Guards shall meet the minimum distance from the point of operation or moving parts as listed below:

Distance of Opening from Hazard	Maximum Size of Opening
½" – 2 ½"	1/4"
2 ½" to 3 ½"	3/8"
3 ½" to 6 ½"	5/8"
6 ½" to 7 ½"	1 1/4"
7 ½" to 17 ½"	1 7/8"
17 ½" to 36"	5"
>36"	Standard Railing

- Guards may be provided with hinged or removable sections where it is necessary to change belts, adjust, or for admission of lubricants.
- Materials – Non-corrosive metal is the best material for guards. Clear plastic guards may be used, which can allow for easy inspection. Plastic guards or safety glass may be used where visibility through the guard is required. Wood guards are generally not recommended because of their flammability and lack of durability and strength. In areas where corrosive chemicals are used, wood guards may be the best choice.

Point of operation guards must conform to appropriate standards (e.g., standard for punch press or table saw). If specific standards are not available, then the construction of the machine or guard should prevent the operator from having any part of their body in the danger zone during equipment cycling.

Abrasive wheels must be equipped with a manufacturer approved safety guard, which is designed to restrain the pieces of abrasive wheel if the wheel is broken during operation. If the wheel allows for handgrip installation as designed by the manufacturer, one must be equipped. Wheels shall meet specifications for thickness, diameter, and operating speeds.

XV. Operational Requirements

Employees operating machines and equipment shall abide by the following:

- Equipment and machinery shall not be operated without the required safeguards (e.g., guards, presence sensing devices, safety trip controls, etc.) in place and functioning properly.
- Employees shall not wear loose jewelry, clothing or permit unrestrained long hair when working on or in proximity (3 feet or 1 meter) of operating machinery or equipment.
- Do not remove, damage, tamper with or by-pass machine safeguards without Supervisor and Risk Management approval.
- Employees shall not place hands, arms, fingers, or any other portion of body in the point of operation or other recognized danger zone.
- Do not use hand tools to dislodge materials or clear jams. If a guard must be removed or by-passed to clear a jam, clean a machine, lubricate, or otherwise access a point of operation, power transmission or other danger zone, the machine or equipment must be properly de-energized using lockout/tagout.
- Actively look for potential hazards or defects associated with machinery, equipment, or safeguards prior to beginning work and report them to your supervisor immediately.
- Complete pre-use, periodic or routine inspections as required.

- Do not operate equipment or machinery without the required training or authorization.

XVI. Hand Tools

Tools can be used to feed or remove materials into or from a machine to keep an employee's hands away from the danger area. Hand tools may only be used in conjunction with guards or other safeguarding devices. These tools should be shatterproof and ergonomically designed for the specific task being performed. Hand tools must allow easy handling of the material without the operator placing hands in the danger zone. Such tools may not replace guards where required.

XVII. Training

Employees who work with or are potentially exposed to machines or equipment that require safeguarding will receive training to ensure familiarity with the installation, operation, and removal of machine safeguards and to ensure he/she understands and is able to follow all requirements in this program. This training shall have instructions describing at least the following topics:

- Description and identification of the hazards associated with machines.
- The safeguards themselves, how they provide protection, and the hazards for which they are intended.
- How to use the safeguards and why.
- How and under what circumstances safeguards can be removed, in conjunction with lockout/tag-out practices and taking equipment out of service, and by whom (in most cases, repair or maintenance personnel only).
- What to do (e.g., contact the supervisor) if a safeguard is damaged, missing, or unable to provide adequate protection.

Each employee who works in a general area where safeguards are used shall receive training to understand the requirements of this program and to understand that safeguards shall not be removed or defeated.

Employees will be retrained if:

- There is a change in assignment that involves using a different machine.
- There is a change in the machine, equipment or processes that presents new hazards.
- There is a change in the machine safeguarding procedures.
- The supervisor has reason to believe or determines through inspection or observation that an employee lacks sufficient knowledge of the safeguarding procedures.
- An injury or near-miss occurs related to a machine safeguarding hazard or deficiency which provides a learning opportunity for affected employees.

Refresher training will be provided every two years.

XVIII. Program Review

The program will be audited on an annual basis to ensure that the principles and procedures of the machine guarding program are being followed. Where the audit determines that the

principles and procedures of this program are not being followed, appropriate corrective actions/revisions shall be made. The program review shall be completed at least every year.

The review will consider new machines, changes in existing processes, the facility layout, and the cost and frequency of machine-related injuries. The annual review will include a discussion with random operations and maintenance staff to determine overall effectiveness of this program.

XIX. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XX. References

Injury and Illness Prevention Program

SOP-605, Control of Hazardous Energy (LOTO)

SOP-608, Contractor Safety

American National Standards Institute (ANSI) B11.0-2015 *American National Standard for Safety of Machinery*

American National Standards Institute (ANSI) B11.6-2001 *American National Standard for Safety Requirements for Manual Turning Machines with or without Automatic Control*

American National Standards Institute (ANSI) B11.19-2010 *American National Standard for Machines, Performance Criteria for Safeguarding*

American National Standards Institute (ANSI) B11.TR3-2000 *American National Standard Institute Technical Report: Risk Assessment and Risk Reduction – Risks Associated with Machine Tools*

American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME) B20.1-2012 *Safety Standard for Conveyors and Related Equipment*

Title 8, California Code of Regulation (CCR), General Physical Conditions and Structures Orders, §3273

Title 8, California Code of Regulation (CCR), Safe Practices and Personal Protection, §3328

Title 8, California Code of Regulation (CCR), Power Transmission Equipment, Prime Movers, Machines and Machine Parts, §3942-3945, 4000-4002

Title 8, California Code of Regulation (CCR), Flywheels, §3995

Subject: **Machine Safeguarding**

Title 8, California Code of Regulation (CCR), Conveyors, §3999

Title 8, California Code of Regulation (CCR), Shafting, Collars, Clutches, and Couplings, §4050-4051

Title 8, California Code of Regulation (CCR), Pulleys, §4060-4063, 4070-4071

Title 8, California Code of Regulation (CCR), Gears, Friction Drives, Sprockets, and Chains, §4075-4076

Title 8, California Code of Regulation (CCR), Points of Operation and Other Hazardous Parts of Machinery, §4002, 4184-4187

Title 29, Code of Federal Regulations, Standard 1910, Subpart O, Machinery and Machine Guarding

XXI. Revision History

Version	Date	By	Reason
1.0	02/07/2012	Bauer, Wesley	New
2.0	07/01/2020	Frattali, John	Periodic Update – Refer to Program Change Log
3.0	12/08/2021	Spencer, Case	Periodic Update – Refer to Program Change Log

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-121 (Ver. 3) Asbestos Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of the Asbestos Program is to outline the requirements necessary to protect employees, staff, contractors, and visitors from the hazards associated with asbestos and outline regulatory work requirements. The Program establishes responsibilities for Orange County Sanitation District (OC San) personnel to follow to ensure the safety all personnel and to minimize OC San employee exposure associated with materials, activities, or processes that have the potential to release asbestos at or above the Cal OSHA permissible exposure level (PEL) and excursion limit (EL) for asbestos.

This Program covers small scale, short-duration (SSSD) maintenance activities, where the intent is not to abate asbestos but perform repair or maintenance with the potential to disturb or create waste that can fit in a single waste bag or performed in a single prefabricated mini enclosure. This Program does not cover larger scale asbestos removal in conjunction with renovation or demolition operations, which would be conducted by a state-licensed abatement company.

II. Background

Asbestos is a naturally occurring group of fibrous minerals. It was added to many building materials because it is heat and chemical resistant, strong, and not easily degraded. Asbestos was widely used in building materials prior to 1980, however asbestos can still be found in materials used after 1980, although it is rare. Asbestos is primarily found in insulation around pipes, ducts, and tanks, gaskets, as well as used for spray-on fireproofing, plaster, fire doors, wallboard, fume hood linings, linoleum, laboratory countertops, and floor tiles. Asbestos is a concern when it is disturbed, and the fibers become airborne. Asbestos fibers can be inhaled and carried into the lower regions of the lung where they can cause the following diseases:

- Asbestosis: a buildup of scar-like tissue in the lungs that can lead to reduced respiratory function that often leads to disability and death.
- Mesothelioma: a rare and fatal malignant cancer of the membrane lining the lungs, stomach, heart, and other internal organs.
- Lung cancer: a malignant cancer that invades and blocks the lung's air passages. Smoking tobacco combined with asbestos exposure significantly increases the chance of developing lung cancer.

OC San has identified asbestos throughout OC San's plant facilities that our operations and maintenance staff may encounter during routine activities. Several structures and facilities at OC San's Plant 1, Plant 2, and the offsite pump stations contain asbestos-containing materials (ACM). Maintenance activities performed in these structures can expose workers to breathable asbestos fibers. OC San Risk Management Division maintains a database of

asbestos survey results. Maintenance employees only perform Class III or Class IV asbestos-related work, which are the only work activities covered by this Program. Class I through Class IV asbestos-related work performed by contractors is regulated by OC San Specification 01900 for Hazardous Material Mitigation and Controls.

Based on monitoring data conducted to date by OC San, if employees follow the current work practices and engineering controls provided in this Program and the associated job safety analyses (JSAs), then it is not probable that any OC San employee could be exposed to asbestos over the Cal OSHA PEL or EL.

All contractors hired by OC San to perform work identified by this Program, must follow OC San Specification 01900 Hazardous Materials Mitigation and Controls as a minimum work standard.

III. Definitions

Abatement: Process of eliminating or reducing the asbestos hazard in the building material or structures.

Asbestos: Includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of these minerals that have been chemical treated and/or altered.

Asbestos-Containing Material (ACM): Any material containing more than 1% asbestos.

Asbestos-Containing Construction Material (ACCM): Any manufactured construction material containing more than $1/10^{th}$ of 1% asbestos by weight.

Class I Asbestos Work: Activities involving the removal of thermal systems insulation (TSI) and surfacing ACM, and presumed ACM (PACM).

Class II Asbestos Work: Activities involving the removal of ACM that is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work: Repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

Class IV Asbestos Work: Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Competent Person: One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them, one who can identify existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them.

Disturbance: Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in

one standard sized glove bag or waste bag to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

Excursion Limit (EL): The level in which an employer shall ensure that no employee is exposed to an airborne concentration of asbestos more than 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes.

Friable: ACM that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure and which contains greater than 1% asbestos by area or weight.

HEPA: High-efficiency particulate air filter that is capable of trapping and retaining at least 99.97% of all monodisperse particles of 0.3 micrometers in diameter.

Job Safety Analysis (JSA): Is defined as is a technique that focuses on job tasks to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment and provides control requirements to minimize the hazards.

Permissible Exposure Limit (PEL): An employee exposure to an airborne contaminant in a workday, expressed as an 8-hour TWA concentration, which cannot be exceeded. Asbestos PEL is 0.1 f/cc.

Presumed Asbestos-Containing Material (PACM): Thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of a material as “PACM” may be rebutted when the employer or owner demonstrates that PACM does not contain more than 1% asbestos.

Regulated Area: An area established by the employer to demarcate areas where asbestos work is conducted, and any adjoining area where debris and waste from such work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

SDS: Safety data sheets. Detailed specification sheets which conform to OSHA guidelines for communicating hazards of products.

Surfacing Material: material sprayed, troweled-on, or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes).

Thermal system insulation (TSI): ACM applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

IV. Responsibilities

A. Risk Management Division

1. OC San General Manager has overall responsibility to ensure compliance with asbestos-related requirements and delegates authority to Risk Management to establish, implement, and manage the applicable programs.

2. Provide compliance assistance, perform potential exposure evaluations, and monitoring activities as needed.

3. Develop JSAs for known work tasks where there is a potential of disturbing asbestos-containing materials.

4. Evaluate facility operations and proposed facility renovations and construction to determine if ACM/PACM will be disturbed and recommend bulk sampling or other appropriate actions, if warranted.

5. Review work and compliance plans for asbestos abatement projects.

6. Coordinate services of licensed and certified contractors to conduct exposure assessments, surveys, and remediate asbestos.

7. Provide technical assistance regarding this Program as well as interpret, report, and communicate asbestos-related results as necessary.

8. Arrange for waste collection and sign transportation and disposal manifests for asbestos-containing wastes.

9. File, maintain, and update asbestos inventory information and asbestos abatement air clearance results, as regulatory required.

10. Provided an annual notification to OC San employees in accordance with California Health and Safety Code, Chapter 10.4. This notification includes the location and type of ACM.

11. Review and update this Program annually.

B. Supervisors/Managers

1. Ensure that employees or contractors working with or around asbestos are familiar with the contents of this Program and its applicable regulatory requirements.

2. Assure employees who are required to be trained receive training in accordance with this Program.

3. Assure employees practice safe work procedures in accordance with their training and use the proper equipment and controls.

4. Request assessments of work activities in areas containing asbestos when there is a question about the content of composition of the material.

C. Employees

1. Report materials suspected of containing asbestos to your supervisor prior to disturbance. Notify supervisor and/or Risk Management of any newly discovered ACM or PACM within 24 hours of the discovery. Immediately report accidental disturbances to your supervisor and Risk Management.

2. Perform removal activities as trained for in a safe manner following all regulations and this Program while wearing appropriate personal protective equipment as necessary for the type of job performed.

3. Follow all safety rules, policies, and procedures regarding activities involving asbestos. Refer to assigned JSAs in Cority for asbestos-related work activities.

4. In general, do not disturb or remove any suspected or known asbestos without prior approval and without strict adherence to this Program.

D. Contractors

1. Must follow OC San's safety rules, policies, and procedures.

2. Upon discovery of ACM or PACM, the Contractor shall stop work and immediately notify the OC San Engineer assigned to the project.

3. Only properly trained and licensed contractors shall remove, abate, or clean up asbestos dust and debris.

V. Assessment

A. OC San must assess the workplace to determine the presence of asbestos. This is typically achieved by collecting representative samples of building materials and coatings (either by destructive or non-destructive methods) suspected of containing asbestos. Samples will be submitted to a qualified, nationally recognized laboratory with successful participation in the National Voluntary Laboratory Accreditation Program (NVLAP) for analyzing asbestos.

B. OC San maintains sampled material results in an asbestos database, managed, and updated by Risk Management.

C. OC San may review as-built drawings for past projects to determine if building constructed prior to 1980 may have contained asbestos. Safety data sheets may also be reviewed to determine if asbestos is a component of products used. Drawings and safety data sheets will be provided to OC San's Industrial Hygiene Consultant or in-house building inspection personnel to complete the survey.

D. The survey must be conducted prior to renovation or demolition of any building, regardless of date of construction. A scope of work will be developed for each project that outlines the materials present as well as the abatement or stabilization techniques to be utilized.

VI. Exposure Monitoring

A. Employees in job classifications, such as Maintenance Mechanics, Facilities Workers, Electrical Maintenance, Instrumentation Maintenance, Painters, Machinists, and Welders/Fabricators, that may expose them to asbestos above the Cal OSHA PEL or EL, shall be included in an initial and periodic exposure monitoring program (e.g., personal breathing-zone monitoring).

1. Results of exposure assessments shall be communicated to employees who may be directly affected by the assessed exposure. Monitoring results shall be communicated individually and in writing within 5 days following receipt of analytical results.

2. Historical data indicates employees are not anticipated to exceed the TWA PEL and/or EL, therefore, reassessment of exposures will be conducted periodically, every 3 years, and if workplace conditions change in a manner that may increase exposure.

3. All monitoring data is maintained by Risk Management and made available for access by affected personnel upon request.

4. In general, collection of personal samples should be representative of a full shift including at least one sample for each job classification collected from the employee's breathing zone, in each work area either for each shift or for the shift with the highest exposure level.

5. Employee exposure is that exposure which would occur if the employee were not using a respirator.

B. Risk Management may hire independent consultants to conduct asbestos oversight and air monitoring during removal projects conducted by abatement contractors as well as O&M authorized staff.

C. Sampling is conducted using approved National Institute of Occupational Safety and Health (NIOSH) Method 7400.

D. Maintenance personal exposures are categorized by type of removal to serve as a negative exposure assessment as required by Cal OSHA. A negative exposure assessment is job specific and the workplace conditions, type of material, control methods, work practices, and environmental conditions must closely resemble those of the activity to be represented. The assessment is used to show that personal exposure levels for a given job are well below the permissible exposure limits, so the appropriate level of respiratory protection can be used.

E. In cases where exposure assessments are not completed, the following shall be provided to the employee:

1. Appropriate respiratory protection and protective clothing in accordance with the Respiratory Protection Program and as suited to the specific work task determined by Risk Management.

2. Containment or isolation means.

3. Change areas.

4. Hand washing facilities.

5. Training for Hazard Communication, respiratory protection, work practices, and the appropriate asbestos training.

VII. Notification Procedures

A. Every effort should be made to pre-notify individuals who work in or adjacent to areas where asbestos activities will take place. The notification can be verbal or written.

B. All work activities shall be stopped if you discover building material that you suspect contain asbestos. Do not attempt to handle the material or dispose of the material. Contact the Risk Management Division office immediately for assistance.

C. Written notification required to Cal OSHA for asbestos work only when the amount of ACM exceeds 100 square feet.

VIII. Regulated Areas

A. Asbestos

1. All Class I – III asbestos work must be conducted within a regulated area. A regulated area must have the following:

   a) Must be demarcated in a manner to restrict persons from entering and protect from exposure to airborne asbestos.

   b) Must have signs posted with the following information:

DANGER
ASBESTOS
MAY CAUSE CANCER

CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY

and

WEAR RESPIRATORY PROTECTION AND
PROTECTIVE CLOTHING IN THIS AREA

   c) Must require the use of respirators prior to entry.

   d) Must not allow employees to eat, drink, smoke, chew tobacco or gum, or apply cosmetics.

   e) Must be supervised by a competent person.

2. Under no circumstances is an OC San employee that has not been trained as an asbestos worker allowed to enter a regulated area. Special provisions will be made by Risk Management for emergency personnel, that possess a minimum of Asbestos O&M Training (OSHA Class III), depending on the situation.

IX. Methods of Abatement

A. Asbestos

1. Class I and Class II asbestos work will be performed in accordance with OC San Specification 01900 for Hazardous Materials Mitigation and Controls. Class I and

Class II work will be performed by a third-party licensed asbestos abatement contractor.

2. Class III asbestos work, such as minor asbestos-related work as part of maintenance, minor repair, or minor clean-up, must be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees. This includes:
   a) Demarcating the work area as a “regulated area.”
   b) Using wet methods.
   c) Utilize vacuum cleaners equipped with HEPA filters to collect debris and dust containing asbestos.
   d) In general practice, there should be no abrading of TSI materials. However, if work involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of TSI or surfacing material, employees must use impermeable drop cloths, and must isolate the operation using mini-enclosures or glove bag systems.
   e) Where monitoring results show the PEL has been exceeded, the employees must contain the work area using impermeable drop cloths and plastic barriers or their equivalent or shall isolate the operation using control systems.
   f) Jobs which involve the disturbance of TSI or surfacing material, or when air monitoring results show that the PEL has been exceeded, employees must wear, at a minimum, half-face air purifying negative pressure respirators equipped with HEPA cartridges.

3. Class IV asbestos work must be conducted using wet methods, HEPA vacuums, and prompt clean-up of debris containing ACM or assumed ACM.

4. Employees cleaning up debris and waste in a regulated area where respirators are required must be fitted according to the requirements in accordance with the Respiratory Protection Program.

5. All ACM debris is assumed to be waste that contains asbestos and must be handled according to the OC San waste handling procedures. Each plant has assigned EPA ID numbers and have waste profiles for friable and non-friable asbestos. ACCM is disposed of as general construction debris.

X. Respiratory Protection

A. General

1. OC San employees will be issued respirators by Risk Management, as required. All employees must be medically cleared for respirator use prior to issuance. Refer to the Risk Management’s Respiratory Protection Program for additional details.

2. Respiratory protection may include the following: half-face or full-face tight-fitting air-purifying respirators with HEPA cartridges. All respirators will be quantitatively fit tested by Risk Management or approved vendor, and all mandatory users will be required to be fit tested annually.

3. Respirators for asbestos work must be worn when conducting the following:
    a) All Class I activities.
    b) All Class II activities where ACM is not intact.
    c) All Class II and III activities where wet methods are not used.
    d) All Class II and III activities that do not have a negative exposure assessment.
    e) All Class III work involving thermal systems insulation or surfacing materials.
    f) All work where employees are exposed above the PEL or EL.
    g) In emergencies.

XI. Protective Clothing

A. OC San employees will be supplied with protective clothing consisting of disposable Tyvek® suits. The suits are required to be worn during Class I and Class II asbestos operations involving greater than 25 linear feet or 10 square feet, any operation without a negative exposure assessment, or any operation where exposures will exceed the PEL.

B. Suits should be routinely inspected for rips or tears while working. Damaged suits should be mended or immediately replaced. All contaminated suits should be properly disposed with asbestos waste.

XII. Hygiene Facilities

A. Decontamination areas must be established for Class I asbestos work that is greater than 25 linear or 10 square feet of thermal system insulation or surfacing materials. It must be set up adjacent and connected to the regulated area. All employees must exit and enter through the decontamination area that must consist of an equipment room, shower area, and clean room in series.

B. Decontamination areas are also required for Class I work involving less than 25 linear or 10 square feet, or Class II and III work where exposures exceed the PEL or EL, or where there is no Negative Exposure Assessment. An equipment area must be established adjacent to the regulated area for the decontamination of employees and equipment.

C. It must consist of an impermeable drop cloth on the floor surface. Work clothes must be HEPA vacuumed before removal, all equipment must also be cleaned prior to removal and employees must enter and exit through the equipment room from the regulated area.

XIII. Housekeeping

A. All asbestos waste and debris must be promptly cleaned up by properly trained workers and disposed in the proper manner. Only HEPA filtered vacuums may be used when vacuuming these materials.

B. Dry sweeping, vacuum cleaners, shop vacuums, and compressed air are prohibited for cleaning.

XIV. Medical Surveillance

A. As a result of exposure assessments and depending on the outcome, employees may be required to be involved in a medical surveillance program for asbestos exposures or due to involvement in the respiratory protection program.

B. Medical surveillance requirements may include a health exam, medical questionnaire, and chest x-ray.

C. For respirator use, medical surveillance requirements involve a pulmonary function test.

XV. Training Requirements

A. OC San employees whose job classification may expose them to asbestos shall receive, as a minimum, Hazards Communications training, which includes content on the hazards of asbestos.

B. Only employees trained in the Federal Department of Transportation (DOT) Hazardous Materials shipping procedures may sign hazardous waste shipping documents (e.g., manifests) involving asbestos contaminated wastes.

C. To avoid potential exposure, and in accordance with regulations, only trained and qualified individuals may disturb ACM. Contact Risk Management for training, if employees fall into one of these groups or are otherwise likely to disturb ACM:

1. Class I and II Training

   a) Required training for activities that involve the removal of asbestos containing materials which include but are not limited to the following: thermal systems insulation, surfacing materials, wall board, floor tile and sheeting, ceiling tile, roofing materials, and siding. Training is 32 hours for worker level and 40 hours for competent person level.

   b) If individuals are to be trained in Class II operations only, the training will consist of a minimum of 8 hours with hands-on training for the type of material that will be removed. Annual refreshers are required for both classes.

2. Class III Training

   1) Required training for activities that involve the disturbance of thermal system insulation or surfacing materials for the purpose of conducting repair or maintenance activities only. Training is 16 hours with a 4-hour refresher annually.

   2) For Class III operations for which the competent person determines that the EPA curriculum does not adequately cover the training needed to perform that activity, training shall be conducted that the employee is able to understand and include the specific work practices and engineering controls set forth by this SOP.

3. Class IV Training

a) Class IV training is required for all maintenance and custodial staff that work in buildings that have asbestos containing materials. Initial training is 2 hours with refreshers required annually.

XVI. Disposal Procedures

A. Asbestos waste must be containerized within transparent and leak tight plastic bags of at least 6-mil thickness. Wastes must be double-bagged, wet, sealed with duct tape, and have the appropriate label attached. Utilize specialty asbestos disposal bags from a commercial supplier with OSHA-compliant warning labels either preprinted or purchased separately.

B. The wastes generated by asbestos O&M shall be transported to the designated OC San hazardous waste storage area. The waste shall be placed in closable accumulation containers designated by Risk Management, which will maintain the accumulation containers and arrange for off-site disposal in accordance with DTSC and DOT guidelines.

XVII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XVIII. Reference

Title 8, California Code of Regulations, Section 1529 Asbestos

Title 8, California Code of Regulations, Section 5208 Asbestos

Title 40, Code of Federal Regulations, Section 763.92(a)(1)(2)

South Coast Air Quality Management District (SCAQMD), Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities

XIX. Revision History

Version	Date	By	Reason
1	06/23/2012	Rodney Collins	New Policy
2	09/02/2020	John Frattali	Periodic Update – Refer to Program Change Log
3	12/07/2021	Sheri Ventanilla	Periodic Update – Refer to Program Review Findings Log

ORANGE COUNTY SANITATION DISTRICT	SOP-122 (Ver. 1) Lead Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: New
Approved By: James D. Herberg General Manager	

I. Purpose

The purpose of the Lead Program is to outline the requirements necessary to protect employees from the hazards associated with lead and outline regulatory work requirements. The Program establishes responsibilities for Orange County Sanitation District (OC San) personnel to follow to ensure the safety all personnel and to minimize OC San employee exposure associated with materials, activities, or processes that have the potential to release lead at or above the Cal/OSHA action level (AL) and permissible exposure level (PEL).

This program covers lead-related work associated with maintenance activities, alteration, and/or repair, including painting. This Program does not cover larger scale lead removal in conjunction with renovation or demolition operations, which would be conducted by a state-licensed abatement company.

II. Background

The primary use of lead in the U.S. is for automobile lead-acid storage batteries, a type of rechargeable electric battery which uses an almost pure lead alloy. Lead-formed alloys are typically found in pipes, cable covering, building material, solder, radiation shielding, and collapsible tubes. Lead is also used in ceramic glazes and as a stabilizer in plastics. Lead was used extensively as a corrosion inhibitor and pigment in paints but concerns over its toxicity led the ban of lead in paint for residential and public buildings.

Lead enters the body primarily through inhalation and ingestion. Lead passes through the lungs into the blood where it can harm many of the body's organ systems. While inorganic lead does not readily enter the body through the skin, it can enter the body through accidental ingestion (eating, drinking, and smoking) via contaminated hands, clothing, and surfaces. Workers may develop a variety of ailments, such as neurological effects, gastrointestinal effects, anemia, and kidney disease.

OC San has identified lead throughout OC San’s plant facilities that our operations and maintenance staff may encounter during routine activities. Several structures and facilities at OC San’s Plant 1, Plant 2, and the offsite pump stations contain lead-based paint (LBP). Maintenance activities performed in these structures can expose workers to breathable lead dust. OC San Risk Management Division maintains a database of lead survey results. Maintenance employees only perform lead-related work associated with facility maintenance construction, alteration, and/or repair, including painting. Lead-related work performed by contractors is regulated by OC San Specification 01900 for Hazardous Material Mitigation and Controls as a minimum standard.

Based on monitoring data conducted to date by OC San, if employees follow the current work practices and engineering controls provided in this program and the associated job safety analyses (JSAs), then it is not probable that any OC San employee could be exposed to lead over Cal/OSHA PEL or AL.

III. Definitions

Abatement: Process of eliminating or reducing the lead hazard in the building material or structures.

Action Level (AL): An employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air ($\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA).

Disturbing Activities: Any mechanical activity such as drilling, grinding, or sanding an area or surface that has lead-containing materials.

HEPA: High-efficiency particulate air filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter.

Job Safety Analysis (JSA): Is defined as is a technique that focuses on job tasks to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment and provides control requirements to minimize the hazards.

Lead: Metallic lead, all inorganic lead compounds, and organic leads soaps. Excluded from this definition are all other organic lead compounds.

Lead-Based Paint (LBP): Paint, varnish, shellac, or other coating on surfaces that contain equal to or greater than 0.5% lead by weight, or 5,000 ppm of dry-weight lead. LBP is also measured by an X-ray Fluorescence (XRF) meter and determined to be LBP if it contains equal to or more than 1.0 mg/cm^2 of lead.

Lead-Containing Material (LCM): Any material, including paint, in construction activities containing more than 0.06% lead by weight, or 600 ppm by dry-weight of lead.

Permissible Exposure Limit (PEL): An employee exposure to an airborne contaminant in a workday, expressed as an 8-hour TWA concentration, which cannot be exceeded. Lead PEL is 50 $\mu g/m^3$.

Presumed Lead-Based Paint: Paint of surface coating affixed to a component in or on a structure constructed prior to January 1, 1978. This does not include paint or surface coating that has been tested and found to contain an amount of lead less than one milligram per square centimeter (1.0 mg/cm^2) or less than half of one percent (0.5%) by weight.

Regulated Area: An area established by the employer to demarcate areas lead work is conducted, and any adjoining area where debris and waste from such work accumulate; and a work area within which airborne concentrations of lead, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

SDS: Safety data sheets. Detailed specification sheets which conform to OSHA guidelines for communicating hazards of products.

Trigger Tasks: specified tasks performed when lead is present and that trigger basic protective measures until the employer determines that worker airborne exposures to lead are below levels specified in 8 CCR 1532.1.

IV. Responsibilities

A. Risk Management Division

1. OC San General Manager has overall responsibility to ensure compliance with lead-related requirements and delegates authority to Risk Management to establish, implement, and manage the applicable programs.

2. Provide technical and compliance assistance, perform potential exposure evaluations, and monitoring activities as needed.

3. Maintain abatement and survey records and lead inventory.

4. Develop JSAs for known work tasks where there is a potential of disturbing lead-containing materials.

5. Coordinate services of licensed and certified contractors to conduct exposure assessments and remediate lead.

6. Review work and compliance plans for lead abatement projects.

7. Sign transportation and disposal manifests for lead-containing wastes.

8. Review and update this program annually.

B. Supervisors/Managers

1. Ensure that employees or contractors working with or around lead are familiar with the contents of this program and its applicable regulatory requirements.

2. Assure employees who are required to be trained receive training in accordance with this program.

3. Assure employees practice safe work procedures in accordance with their training and use the proper equipment and controls.

4. Request assessments of work activities in areas containing lead when there is a question about the content of composition of the material.

C. Employees

1. Report materials suspected of containing lead to supervisor prior to disturbance. Report accidental disturbances to your supervisor and Risk Management.

2. Perform removal activities as trained for in a safe manner following all regulations and this program while wearing appropriate personal protective equipment as necessary for the type of job performed.

3. Follow all safety rules, policies, and procedures regarding activities involving lead. Refer to assigned JSA in Cority for lead-related work activities.

4. In general, do not disturb or remove any suspected or known lead without prior approval and without strict adherence to this program.

D. Contractors

1. Must follow OC San's safety rules, policies, and procedures.

2. Upon discovery of suspect lead-containing material, the Contractor shall immediately notify the OC San Engineer assigned to the project.

3. Only properly trained and licensed contractors shall remove, abate, or clean lead dust and debris in accordance with OC San Specification 01900 Hazardous Materials Mitigation and Controls.

V. Assessment

A. OC San must assess the workplace to determine the presence of lead. This is typically achieved by collecting representative samples of surface coatings (either by destructive or non-descriptive methods) suspected of containing lead. Samples will be submitted to a qualified, nationally recognized laboratory with successful participation in the National Voluntary Laboratory Accreditation Program (NVLAP) for analyzing lead.

B. OC San maintains samples materials in a lead database, managed, and updated by Risk Management.

C. Safety data sheets may be reviewed to determine if lead is a component of products used. Drawings and safety data sheets will be provided to OC San's Industrial Hygiene Consultant or in-house building inspection personnel to complete the survey.

D. The survey must be conducted prior to renovation or demolition of any building, regardless of date of construction. A scope of work will be developed for each project that outlines the materials present as well as the abatement or stabilization techniques to be utilized.

VI. Exposure Monitoring

A. Employees in job classifications, such as Maintenance Mechanics, Facilities Workers, Electrical Maintenance, Instrumentation Maintenance, and Painters, that may expose them to lead above the Cal OSHA PEL or AL, shall be included in an initial and periodic exposure monitoring program (e.g., personal breathing-zone monitoring).

1. Results of exposure assessments shall be communicated to employees who may be directly affected by the assessed exposure. Monitoring results shall be

communicated individually and in writing within 5 days following receipt of analytical results.

2. Reassessment of exposures will be conducted periodically, and if workplace conditions change in a manner that may increase exposure.

3. All monitoring data is maintained by Risk Management and made available for access by affected personnel upon request.

4. In general, collection of personal samples should be representative of a full shift including at least one sample for each job classification collected from the employee's breathing zone, in each work area either for each shift or for the shift with the highest exposure level.

5. Employee exposure is that exposure which would occur if the employee were not using a respirator.

B. Risk Management may hire independent consultants to conduct lead air monitoring during maintenance projects conducted by O&M authorized staff.

C. Sampling is conducted using approved National Institute of Occupational Safety and Health (NIOSH) Method 7082.

D. Maintenance personal exposures are categorized by type of removal to serve as a negative exposure assessment as required by Cal OSHA. A negative exposure assessment is job specific and the workplace conditions, type of material, control methods, work practices, and environmental conditions must closely resemble those of the activity to be represented. The assessment is used to show that personal exposure levels for a given job are well below the permissible exposure limits, so the appropriate level of respiratory protection can be used.

E. In cases where exposure assessments are not completed, the following shall be provided to the employee:

1. Appropriate respiratory protection and protective clothing in accordance with the Respiratory Protection Program and as suited to the specific work task determined by Risk Management.

   a) Level 1 Trigger Task – any of the following with lead-containing coatings or materials: spray painting, manual demolition, manual scraping, sanding, use of heat gun, power tool cleaning with dust collection system. Minimum required respirator: half-mask respirator with N-100, R-100, or P-100 filters.

   b) Level 2 Trigger Task – any of the following with lead-containing coatings or materials: using lead-containing mortar, lead burning, rivet busting, power tool cleaning without dust collection system, clean-up activities using dry expendable abrasives, abrasive blasting enclosure movement or removal. Minimum required respirator: air-supplied hood or helmet, or loose-fitting hood or helmet powered air-purifying respirator with N-100, R-100, or P-100 filters.

   c) Level 3 Trigger Task – abrasive blasting, welding, cutting, or torch burning on structures where lead-containing coatings or materials are present. Minimum required respirator: full-face supplied-air respirator operated in positive

pressure or continuous flow mode or full-face PAPR with N-100, R-100, or P-100 filters.

2. Containment or isolation means.

3. Change areas.

4. Hand washing facilities.

5. Biological monitoring, including blood sampling and analysis for lead and zinc protoporphyrin levels.

6. Training for Hazard Communication, respiratory protection, and the appropriate lead training.

VII. Notification Procedures

A. Every effort should be made to pre-notify individuals who work in or adjacent to areas where lead activities will take place. The notification can be verbal or written.

B. All work activities shall be stopped if you discover building material that you suspect contain lead. Do not attempt to handle the material or dispose of the material. Contact the Risk Management Division office immediately for assistance.

C. Written notification required to Cal OSHA for lead work only when the amount of LBP exceeds 100 square feet or 100 linear feet.

VIII. Regulated Areas

A. Lead

1. Regulated areas shall be established, where feasible, for work areas where employees are exposed to lead at or above the PEL and/or where trigger tasks are performed.

2. In areas where exposure to lead may exceed the PEL the following signage must be in place to warn employee of hazards.

DANGER

LEAD WORK AREA

MAY DAMAGE FERTILITY OR THE UNBORN CHILD

CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM

DO NOT EAT, DRINK OR SMOKE IN THIS AREA

3. Access to the regulated areas shall be restricted to authorized employees authorized as determined by Risk Management.

4. Each employee authorized to enter the regulated area shall be provided with and be required to wear the appropriate protective equipment.

5. Eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics is prohibited within the regulated area.

IX. Methods of Abatement

A. General

1. Refer to assigned JSA in Cority for task specific lead-related work activities which detail task steps, associated hazards, and controls.

2. Engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead at or below the permissible exposure limit to the extent that such controls are feasible, must be utilized.

3. Wherever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure to or below the PEL, these practices must be used nonetheless reduce employee exposure to the lowest feasible level.

4. Work should be performed under the supervision of a certified employee.

5. Workers must be trained and wear appropriate PPE including respiratory protection and body covering.

6. Prior to removal of lead containing paint, non-affected areas must be isolated to ensure lead-contaminated dust does not enter unwanted spaces. This includes containing work area, sealing ductwork, windows, and doors within the renovation area.

7. Acceptable methods of lead-containing paint removal include:
   a) Wet scraping
   b) High speed sanding or grinding only with EPA approved equipment and HEPA filtration of any dust.
   c) Non-approved lead containing paint removal methods include:
      1) Open flame burning, torching or heat gun use over 1100°F.
      2) Use of high-speed sanding, grinding, abrasive blasting or sand blasting, unless using EPA approved equipment and protocols.
   d) Lead waste must be collected at the end of each work shift and contained to prevent release of dust and debris. Waste must be properly disposed.

8. Upon the completion of the project, the affected area must be thoroughly cleaned to remove all dust, debris, and lead-containing residue. This includes removal and proper disposal of paint chips, protective sheeting, and PPE.

9. The area should be cleared upon cleaning to ensure no lead-containing debris remains. Coordinate with Risk Management for visual clearance and/or wipe clearance testing.

B. Welding, Cutting or Brazing on Lead-Containing Materials

1. Metal plumbing, piping and fittings may contain lead. When heated above 1100 degrees Fahrenheit, lead is released as fumes and can be inhaled by the worker.

2. The following precautions should be followed when conducting hot work on lead containing materials.

   a) Contact Risk Management to determine if lead is present in materials to be welded, cut, or brazed. If feasible, spot abatement shall be performed by trained personnel prior to hot work.

   b) If lead is present, all hot work activities must be performed by trained employees with the use of appropriate respiratory protection and/or engineering controls (i.e., local exhaust ventilation).

   c) Employees must also follow all protocols outlined in the Hot Work Program.

   d) Workers must utilize the appropriate PPE including full-face respirators and full body covering.

   e) Upon completion of the job, all waste must be disposed of properly, disposable PPE must be discarded properly, and respirators must be properly cleaned. All lead dust and debris are handled according to the OC San waste handling procedures. Each plant has assigned EPA ID numbers and have waste profiles for lead.

X. Respiratory Protection

A. General

1. OC San employees will be issued respirators by Risk Management, as required. All employees must be medically cleared for respirator use prior to issuance. Refer to the Risk Management's Respiratory Protection Program for additional details.

2. Respiratory protection may include the following: half-face or full-face tight-fitting air-purifying respirators with HEPA cartridges. All respirators will be quantitatively fit tested by Risk Management or approved vendor, and all mandatory users will be required to be fit tested annually.

3. Respirators for lead work must be worn when:

   a) Employee's exposure to lead exceeds the PEL.

   b) Work operations for which engineering controls and work practices are not sufficient to reduce exposures to or below the PEL.

   c) When an employee requests a respirator.

   d) When respirators are required to provide interim protection.

XI. Protective Clothing

A. OC San employees will be supplied with protective clothing consisting of disposable Tyvek® suits. The suits are required to be worn when lead exposure levels exceed 200 µg/m3, any operation without a negative exposure assessment, or any operation where exposures will exceed the PEL.

B. Suits should be routinely inspected for rips or tears while working. Damaged suits should be mended or immediately replaced. All contaminated suits should be properly disposed with lead waste.

XII. Hygiene Facilities

A. Clean change areas shall be provided when airborne exposure to lead is above the PEL, and as interim protection for employees performing tasks.

B. Change areas are to be equipped with separate storage facilities for protective work clothing and equipment and for street clothes which prevent cross-contamination.

C. Employees must not leave the workplace wearing any protective clothing or equipment that is required to be worn during the work shift.

D. Shower facilities are to be provided for employees whose airborne exposure to lead is above the PEL.

E. Employees whose airborne exposure to lead is above the PEL, shall wash their hands and face prior to eating, drinking, smoking, or applying cosmetics.

F. Employees must remove personal protective equipment and protective work clothing prior to entering lunchroom facilities or eating areas to prevent dispersion of lead dust.

XIII. Housekeeping

A. All lead waste and debris must be promptly cleaned up by properly trained workers and disposed in the proper manner. Only HEPA filtered vacuums may be used when vacuuming these materials.

B. Dry sweeping, vacuum cleaners, shop vacuums, and compressed air are prohibited for cleaning.

XIV. Medical Surveillance

A. As the result of exposure assessments and depending on the outcome, employees may be required to be involved in a medical surveillance program for lead exposures or due to involvement in the respiratory protection program.

B. Specific requirements exist for lead and the use of respirators.

1. For lead, medical surveillance requirements may include biological monitoring (blood tests for lead), physical examination, and other tests.

2. For respirator use, medical surveillance requirements involve a pulmonary function test.

C. Medical surveillance consists of periodic biological monitoring and medical examinations.

1. Initial medical surveillance consisting of blood sampling and analysis for lead and zinc protoporphyrin must be provided to all employees exposed at any time (1 day) above the action level.

2. Full medical surveillance must be made available to employees exposed to lead levels above the action level (30 µg/m3) for more than 30 days in any 12-month period and whose blood lead level exceeds 40 µg/dl, or any employee working with lead who develops signs or symptoms of excessive lead exposure should be enrolled in the Medical Surveillance Program.

3. Biological monitoring must be provided at least every 2 months for the first 6 months and every 6 months thereafter until the blood lead level is below 40 µg/dl.

4. If elevated blood levels are detected over 40 µg/dl the monitoring frequency must be increased to every 2 months until blood levels fall below 40 µg/dl on two consecutive monitoring sessions.

   a) Blood test results shall be communicated individually and in writing within 5 working days following receipt of such results.

   b) Blood lead levels that are detected above 20 µg/dl are automatically reported to OSHA within 5 business days, and OSHA will perform a workplace inspection within 3 business days.

XV. Training Requirements

A. General

1. OC San employees whose job classification may expose them to lead shall receive, as a minimum, Hazards Communications training, which includes content on the hazards of lead.

2. Only employees trained in the Federal Department of Transportation (DOT) Hazardous Materials shipping procedures may sign hazardous waste shipping documents (e.g., manifests) involving lead contaminated wastes.

B. Lead

1. Training shall include at least the following topics regarding lead and its hazards and requirements:

   a) Reproductive/developmental toxicity, central nervous system effects, kidney effects; blood effects and acute toxicity effects.

   b) The content of the Cal/OSHA standard and its appendices.

   c) The specific nature of the operations which could result in exposure to lead above the action level.

d) The purpose, proper selection, fitting, use, and limitations of respirators.

e) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant).

f) The engineering controls and work practices associated with the employee's job assignment including training of employees to follow relevant good work practices.

g) The contents of any compliance plan and the location of regulated areas in effect.

h) Instructions to employees that chelating agents shall not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.

i) The employee's right of access to medical and exposure records.

XVI. Disposal Procedures

A. Lead waste must be containerized within leak tight plastic bags of at least 6-mil thickness. Wastes must be bagged wet and sealed with duct tape. Utilize specialty lead disposal bags from a commercial supplier with OSHA-compliant warning labels either preprinted or purchased separately.

B. The wastes generated by lead O&M shall be transported to the designated OC San hazardous waste storage area. The waste shall be placed in closable accumulation containers designated by Risk Management, which will maintain the accumulation containers and arrange for off-site disposal in accordance with DTSC and DOT guidelines.

XVII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XVIII. Reference

Title 8, California Code of Regulations, Section 1532.1 Lead

Title 8, California Code of Regulations, Section 5198 Lead

Title 17, California Code of Regulations, Division 1, Chapter 8 Accreditation, Certification, and Work Practices for Lead-Based Paint and Lead Hazards

XIX. Revision History

Version	Date	By	Reason
1	12/07/2021	Sheri Ventanilla	Periodic Update – Refer to Program Review Findings Log

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-130 (Ver. 4) Crane Safety Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The Orange County Sanitation District (OC San) is committed to protecting our employees, contractors and the public from unsafe conditions and practices. The purpose of the Crane Safety Program is to define the work practices and inspection procedures to help ensure that operators of the cranes and hoists are protected from the potential hazards associated with the movement of equipment and material.

OC San employees may be required to operate cranes and related equipment as part of their job duties. To minimize risks to people and property OC San restricts the operation of all cranes to those persons who have been properly trained, authorized, or certified to operate cranes.

II. Background

Moving large, heavy loads is a crucial component of OC San's operation. Procedures have been developed for these operations, including careful training and extensive workplace precautions. There are significant safety issues to be considered, both for the operators of the diverse "lifting" devices, and for employees in proximity to them.

The Crane Safety Program applies to all OC San employees as well as contractors conducting crane work while on any OC San property. The intent of this program is to control crane hazards by ensuring the following:

- Equipment is maintained and operated according to manufacturer's recommendations.
- Responsible persons are trained.
- Safe work practices and safety regulations are followed.
- Environmental conditions affecting lift operations are monitored.
- Critical Lift Plans are developed for high hazard lifts.

This program must be understood and complied with by all persons charged with the responsibility of operating, servicing, and managing fixed and mobile cranes, and related equipment on OC San's behalf.

III. Definitions

Boom: A member section of a crane or derrick, the lower end of which is affixed to a mast, base, carriage, or support, and the upper end supports a hook or other end attachment. The

length of the boom shall be taken as the straight- line distance between the axis of the foot pin and the axis of the end sheave pin.

Boom Stop: A device used to limit the angle of the boom at the highest position.

Bridge: Principal horizontal beam(s) of the overhead crane which supports the trolley.

Crane Operator: Any person operating a crane.

Critical Lift: A non-routine crane lift requiring detailed planning and additional or unusual safety precautions.

Counterweight: Weights used for balancing loads and the weight of the crane in providing stability for lifting.

Chart (Load): The manufacturer's minimum and maximum lifting limitations for any crane.

Designated Signal Person: An individual who is assigned to give recognized hand signals to the crane operator during any crane lifting operation.

Drum: The spool or cylindrical unit around which wire rope is wound to raise and lower loads.

Ground worker: An individual who performs a variety of duties to support crane lift operations including unskilled physical labor and specialized equipment operation.

Hoist (Boom): A hoist drum and rope reeving system used to raise and lower the boom.

Hold-Harmless Agreement: A contract under which the one party agrees to indemnify, defend, and hold harmless a second party, from and against all claims arising out of use of equipment.

Lifting Devices: Devices that are not normally reeved onto the hoist chain, wire rope, or web strap, such as grabs, and other supplemental devices used for ease of handling certain types of loads. The weight of these devices is to be considered part of the load to be lifted.

Lift Supervisor: Supervisor responsible for direct oversight of a crane lift operation, and ensuring the operation meets OC San and regulatory requirements for inspection, personal qualification, and site preparations.

Load Chart: The manufacturer's absolute limitations of a crane based on structural strength and stability of the crane.

Mechanic: Performs technical duties and responsibilities in the maintenance, repair, service, and troubleshooting of cranes and other mobile equipment.

Mobile Crane: Hydraulic or lattice booms on wheeled or crawler-tracked under carriages.

Outriggers: Support members attached to the crane's carrier frame which is used to raise the crane off the rubber wheels for increased capacity and stability.

Overhead Crane: Any hoisting device where the hook-and-line mechanism runs along a horizontal beam that runs along two rails or the hook-and-line mechanism runs along a cantilevered (jib) boom arm.

Pendant Control: Suspended push button controls from crane to floor for operator control of functions.

Qualified Person: A person designated by the employer who by reason of training, has demonstrated the ability to safely perform all assigned duties and, when required, is properly licensed.

Qualified Rigger: A person who is trained to handle and move loads during a crane lift operation.

Rated Capacity: The maximum load values shown on a load chart for a particular crane configuration.

Reeving: Refers to a rope system in which the rope travels around drums and sheaves.

Safety and Health Supervisor: Supervises and coordinates activities and operations within the Risk Management Division at OC San.

Rated Load: The maximum load for which a hoist is designated by the manufacturer.

Rope: For all hoisting operations, any reference to rope will mean wire rope.

Sheave: A grooved wheel or pulley used with a rope or chain to change direction and point of application of a pulling force.

Shock Loading: A sudden or unexpected load that is imposed upon a crane, or related equipment.

Spotter: A safety observer whose sole task is observing and warning against the unsafe approach to hazards, such as overhead power lines.

Tower Cranes: A crane having a revolving boom with counterweight mounted on a vertical mast or tower.

Trolley: Carries drum and hoist mechanism and travels on the bridge rail.

IV. Responsibilities

A. Risk Management

1. Review the Crane Safety Program on an annual basis and revise it, as necessary.

2. Identify those who are authorized for their use.

3. Provide the technical assistance regarding the regulatory requirements of cranes, chains, slings, and hoists.

4. Provide or arrange for training for the safe operation of overhead cranes, and the inspection procedure for chains, slings, and hoists.

5. Review and approve critical lift plans

6. Review and approve hold-harmless agreements for contractors using OC San bridge cranes.

7. Coordinate quarterly inspections for OC San rigging.

B. Lift Supervisors

1. Make sure Crane Operators and Riggers are properly trained and qualified.

2. Ensure that Crane Operators have satisfactory procedures for inspection of equipment.

3. Ensure that riggers are familiar with equipment manufacturer's procedures.

4. Coordinate communications between the crane operator and others working near the crane.

5. Thoroughly evaluate ground conditions, wind speed, overhead power lines, and develop a procedure or cancel crane lift operations in the event of severe weather warnings

6. Develop and follow a general lift plan or a written Critical Lift Plan.

7. Ensure that certifications for all cranes and operators on site are current.

8. Keep workers clear of hoisted loads.

9. Notify workers before a lift begins.

C. Crane Operators

1. Authorized crane, hoist, and sling operators shall be required to pass a written or oral examination and a practical operating examination offered by OC San unless they are able to furnish satisfactory evidence of qualifications and experience. Qualification shall be limited to the specific type of equipment for which the operator is examined. Crane training must be current at the time of use for the type of crane used.

2. Crane Operators shall be physically fit and thoroughly trained, competent, and not using any drug that could impair physical, visual, or mental reactions or capabilities, and must understand all the regulations regarding crane safety.

3. Read the operator manual for each crane operated.

4. Conduct and document pre-use inspection.

5. Use the crane manufacturer's load chart for each crane.

6. Know the weight of each load.

7. Follow the manufacturer's procedures for proper outrigger deployment.

8. Check the condition of the ground and blocking materials regularly.

9. Check for overhead power lines and other obstructions.
10. Take into consideration, wind and temperatures when making any lift.
11. Respond to signals from the person who is directing the lift, or an appointed signal person.
12. The operator shall always obey a stop signal, no matter who gives it.
13. Do not use a crane for the purpose of pushing or pulling. Do not side load the crane beyond manufacturer recommendation.
14. Avoid hoisting, moving, or swinging suspended loads over or near workers.
15. Do not engage in any activity that diverts attention while operating the crane.
16. Stop and refuse to handle loads if there is a safety concern.
17. Never leave suspended loads unattended. In an emergency, if a load must remain suspended, ensure the area is clearly marked with signage and blocked on all four sides to prevent unauthorized access.

D. Spotters, Riggers, and Ground Workers

1. Use standard hand signals as identified in Attachment A of this program.
2. Be observant of hoisting operations in your work area.
3. Be observant and watch for signs of problems during each lift.
4. Check for overhead power lines and other obstructions.
5. Use rigging in accordance with manufacturers recommendations.
6. Never work or position yourself directly under a suspended load.
7. Use only slings or chains that are rated for the load being lifted.
8. Only use appropriate rigging devices for lifts.

E. Crane Mechanics

1. Be qualified to make adjustments and repairs.
2. Ensure all maintenance, inspections, and testing conducted is based on manufacturer’s recommendations, and specific site conditions.
3. Seek approval in writing of crane manufacturer for any modifications of the crane that will change the structural or lift characteristics of the equipment.
4. Ensure all maintenance related inspections occur at frequency specified by the manufacturer, or Cal/OSHA.

V. Standards and Practices

A. General Lifting Requirements

1. A competent person must visually inspect all lifting devices and equipment prior to use. Lifting operations shall not commence unless a visual assessment of the lift has been completed and the competent person has determined the lifting methods and equipment are safe and ready for use. If any deficiency is identified, an immediate determination must be made by the competent person as to whether the deficiency constitutes a safety hazard.

2. Load capacity charts recommended operating speeds, special hazard warnings, and other essential information shall be conspicuously posted in all cranes, hoists, and other equipment. The rated load capacity shall not be exceeded.

3. All crane load charts are to be clearly legible and in clear view from the operator's position. The rated load of a crane must be clearly marked on each side of a crane. Cranes shall have all required signage and decals on the crane body.

4. Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations.

5. Unless power lines are de-energized and visibly grounded, with confirmation from the utility owner, encroachment prevention measures must be implemented to prevent the crane from breaching a minimum clearance distance. For crane work near energized electrical lines up to 350kV, minimum clearance distance options are:

   a. Maintain 20 feet distance; or

   b. Determine the actual line voltage and implement encroachment prevention measures to maintain clearance using the table below.

VOLTAGE (NOMINAL, KV, ALTERNATING)	MINIMUM CLEARANCE (FEET)
UP TO 50	10
>50 TO 175	15
>175 TO 350	20
>350 TO 550	27
>550 TO 1,000	45
>1000	Established by Utility Owner/Engineer

   c. A proximity alarm shall be implemented to give the operator sufficient warning to prevent against encroachment. A dedicated spotter who is in continuous contact with the operator can also be used. The spotter shall be equipped with a visual aid to assist in identifying minimum distance.

6. Proper barricades shall be placed around swing radius of cranes and other lifting equipment as appropriate. Maintain minimum clearance of 3 inches overhead and 2 inches laterally must be provided and maintained between the crane and any obstruction.

7. Where passageways, foot walks, or walkways exist, their placement must not present a hazard to employees when cranes are in use: Foot walks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot and shall be slip resistant. Elevated walkways must provide adequate fall protection through the installation of appropriate guardrail systems.

8. All personnel who are not involved with the lift shall be kept at a distance outside of the swing radius of the load. Hard hats, eye protection, safety vest, and safety footwear shall be worn.

9. Employees shall not work or walk under a suspended load, nor ride the ball or load.

10. Suspended loads shall be attended constantly unless they are physically secured to prevent unintended movement. The operator shall remain at the controls while the crane is being used or supporting a load.

11. All safety devices on the lifting equipment must be operational.

12. Clearance from obstructions: minimum clearance of 3 inches overhead and 2 inches laterally must be provided and maintained between the crane and any obstruction. Where passageways, foot walks, or walkways exist, their placement must not present a hazard to employees when cranes are in use: Foot walks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot and shall be slip resistant. Elevated walkways must provide adequate fall protection through the installation of appropriate guardrail systems.

13. Mobile cranes shall be uniformly level within one percent of level grade and located on firm footing. Ground bearing pressures shall be determined by Lift Supervisor.

14. Wind must not exceed the speed recommended by the manufacturer or, where manufacturer does not specify this information, the wind speed shall be determined by a qualified person.

15. The hoist chain or hoist rope shall be free from kinks or twists and shall not be wrapped around the load.

16. The load shall be attached to the load block hook by means of slings or other devices.

17. Care shall be taken to make certain that the load, sling, attachments, and load block clear all obstacles. The load shall be clear from any obstruction.

18. The load, sling, or lifting device shall be seated in the bowl of the hook. Hooks shall have an operational safety latch that fully closes.

19. The load shall be secured, balanced, and positioned in the hook, sling, or lifting device before the load is lifted more than a few inches.

20. The hook shall be brought over the load in such a manner as to minimize swinging.

21. The load shall be moved in a slow and controlled manner. There shall be no sudden acceleration or deceleration of the moving load.

22. Cranes shall not be used for side pulls.

23. Exposed moving parts, such as gears, set screws, projecting keys, chains, and chain sprockets, which constitute a hazard under normal operating conditions, shall be guarded.

24. The load shall not be lowered below the point where two wraps of rope remain on each anchorage of the hoisting drum unless a lower limit device is provided, in which case no less than one wrap shall remain.

25. The load block should be lifted above head level for storage when the crane is not in use.

26. Mobile cranes are not to be moved when the boom is in the elevated or in a working position unless manufactured for pick and carry purpose.

27. When outriggers are used on mobile cranes, the outriggers shall be extended or deployed per the crane manufacturer's load and capacity chart specifications and set to remove the machine weight from the wheels.

28. When rotating a mobile crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radius at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.

29. A fire extinguisher of not less than 10-ABC rating shall be kept in serviceable condition and readily accessible to the crane operator.

30. When hoisting personnel or using bridge as a work platform:
    a. A full-body harnesses must be used for fall protection.
    b. Personal fall arrest and positioning systems must be anchored to a substantial part of the equipment, as approved by the Critical Lift Plan.
    c. Fall restraint systems must be anchored to any part of the equipment capable of withstanding twice the maximum load. A personal fall arrest system is permitted to be anchored to the crane's hook (or other part of the load line) when approved by a Critical Lift Plan.

31. Hoists shall not be operated by other than hand power of one operator. Hoists shall not be operated with an extension on the lever.

B. Inspections

1. Frequent Inspections
    a. Crane operators shall inspect each crane or hoist prior to each use, including observation during operation for any deficiencies that might appear between regular inspections.

b. Inspection records will be maintained with the crane for at least one year, after which they will be retained by Risk Management per retention schedule.

c. Any deficiencies shall be carefully examined, and a determination made as to whether they constitute a hazard. If adjustments or repairs are necessary, or any defects are known, the operator shall report this promptly to the appointed person.

d. Defective cranes must be removed from service and locked out of service until defects are corrected.

e. Frequent inspections shall include but not be limited to the following items:

1) Operating mechanisms for proper operation, proper adjustment, and unusual sounds, such as, but not limited to, squeaking, grinding, grating, etc.

2) Verify operation of the upper limit device(s) under no-load conditions.

3) Tanks, valves, pumps, lines, and other parts of air or hydraulic systems for leakage.

4) Hook attachment and securing means.

5) Rope for proper spooling onto the drum(s) and sheave(s).

6) Warning device(s) for proper operation.

f. The operator shall check the hoist brake(s) at least once each shift if a load is approaching the rated load. This shall be done by lifting the load a short distance and applying the brake(s).

2. Periodic (Quarterly/Annual) Inspections

a. Mobile cranes, bridge cranes, and gantry crane periodic inspections will be completed by an OC San service provide that is qualified to perform such inspections. The service provider is overseen by the maintenance division.

b. Inspections are documented. Annual inspections results are to be submitted to Cal/OSHA.

c. At least every 12 months the equipment must be inspected by a qualified person. Disassembly is required, as necessary, to complete the inspection. The equipment inspection must include the equipment structure (including the boom and, if equipped, the jib), structural members (for deformed, cracked, or significantly corroded), bolts, rivets, and other fasteners (loose, failed, or significantly corroded), as well as inspected for cracked welds.

d. Periodic inspections will be completed four times each year. The annual certification can serve as one of the required periodic inspections.

e. These inspections shall include all items listed under frequent inspection, as well as:

1) Noting any cracked, corroded, worn or loose members or parts.

2) Noting and replacing loose bolts and tightening those bolts.

3) Testing the limit indicators (wind, load, etc.), power plant and electrical apparatus.

4) Examining the electrical apparatus for any signs of pitting, or any deterioration of controller contractors, limit switches, and push button stations.

5) Travel distance steering.

6) Testing the braking system for excessive wear on the lining, pawls, and ratchets.

7) Hooks and cables.

8) Bolts, rivets, and other fasteners: loose, failed or significantly corroded

f. If any adjustments must made to the unit, the crane will not be operated until all guards have been installed, all safety devices reactivated, and all maintenance equipment moved. If any defect is found, the crane will not be operated until the repair or adjustment is

3. Quadrennial (every four years) Proof Load Test
   a. Load test is conducted in accordance with requirements for periodic inspections.
   b. Load testing must be performed at no more than 125 percent of the rated load unless it is otherwise recommneded by the equipment manufacturer.
   c. Inspections are documented. Load results are to be submitted to Cal/OSHA as part of annual inspection.

4. Rigging
   a. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a qualified person. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.
   b. Rigging shall have affixed, legible markings with manufacturer safe working loads.

C. Signals

1. A designated signal person must be provided when the equipment travel is not in full view of the operator.

2. Only qualified persons shall be permitted to give signals. A stop signal may be given by any person.

3. A uniform signal system shall be used on all operations and if hand signals are used, they shall be clearly understood by the operator. Recommended hand signals are provided in Attachment A.

4. Signals must be suitable for the site conditions, and tested before beginning operations, if necessary.

5. The operator must safely stop operations if the ability to transmit signals is interrupted.

6. When a device is used to transmit signals for one crane (or multiple cranes), it must be on a dedicated channel, and the operator must use a hand-free device for reception of signals.

7. Applicable hand signal charts (Attachment A) must be posted conspicuously on equipment or in the vicinity of the operations.

D. Lift Planning

1. General

   a. Each lift involving a bridge crane, mobile crane, hoist, or gantry shall be planned, hazards identified and controls, and overseen by the Lift Supervisor.

   b. A pre-lift meeting involving the participating personnel (i.e., crane operator, lift supervisor, rigger) must be conducted prior to making a lift.

   c. The Lift Supervisor shall be present at the lift site during non-critical or ordinary lift operations. If the lift is being made by only one person, the person assumes all responsibilities of the Lift Supervisor.

2. Critical Lifts

   a. Critical Lift is any lift with one or more of the following characteristics, which require additional planning requirements:

      1) Load is lifted over an occupied building.

      2) Lift meets or exceeds 75% of the crane's capacity at the given radius as posted in the load chart for the specific crane and its configuration (Note: applies to mobile cranes only).

      3) Lift requires two or more cranes.

      4) Lifting of 100,000 pounds or more.

      5) Lifts involving personnel platforms.

      6) Working within minimum distance from overhead power lines.

      7) Traveling with a lifted load.

   b. Critical lifts shall have the following additional planning requirements:

      1) A qualified person shall prepare a Critical Lift Plan. The qualified person preparing the plan may be the crane operator, lift supervisor, or designated rigger, and shall include the other qualified individuals in the lift plan.

      2) The plan shall be documented, and a copy provided to the contractor, resident engineer, and Risk Management for review prior to any critical lift.

3) The plan shall be reviewed by, and signed by, all personnel involved with critical lift.

c. The Critical Lift Plan shall include details of:

1) The make, model and capacity of the crane and a proof of current inspection and/or testing.

2) Exact weight of the load to be lifted and all rigging components that adds to the weight.

3) The manufacturer's maximum load limits for the entire range of the lift as listed in the load charts shall also be specified.

4) The rigging plan shall show lift points, rigging procedures and the required lifting hardware.

5) The plan shall describe ground conditions, outrigger, or crawler track requirements, and if necessary, the design of mats or cribbing.

6) Weather conditions or environmental conditions under which lift operations must be stopped.

7) Operational signaling, coordination and communication requirements for the lift operation.

8) Any site obstructions (buildings, boom clearances, etc.).

9) Drawings and any other detailed information required to ensure the safe and successful execution of the lift.

d. Hoisting Personnel

1) The use of a crane to hoist employees on a personnel platform is prohibited, except when the use of conventional means of reaching the worksite, such as a ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous.

2) In addition to the requirements for a Critical Lift Plan, the additional conditions for lifting personnel with a crane shall be:

a) Crane capacity must be reduced by 50%

b) Outriggers must be properly extended with crane leveled.

c) No lifts shall be made on an auxiliary load line while personnel are suspended on a platform.

d) Hooks used shall be of a type that can be closed and locked.

e) Bosun's (Boatswain's) chairs may be used instead of a personnel platform, if the employer can demonstrate to OC San Risk Management

that use of a personnel platform is infeasible due to circumstances at the worksite.

f) Fall Protection must be provided per Cal/OSHA 8 CCR 1670.

E. Rated Load and Other Markings

1. The rated load of the crane shall be plainly marked on each side of the crane. If the crane has more than one hoisting unit, each hoist and each hoist attachment should have the rate load clearly marked. The marking shall be legible from the ground or floor. The load shall not exceed the rated load of the crane or hoist.

2. The rated load of the hoist shall be marked on the hoist or trolley unit or its load block and shall be legible from the ground or floor.

3. Markings provided in Attachment B shall be included at equipment.

4. The load includes the total superimposed weight on the load block or hook and includes any lifting devices such as magnets, spreader bars, chains, and slings.

5. Every load that is lifted by a crane shall be well secured and properly balanced in a sling or other lifting device. Fleet Services Division or Risk Management shall be contacted regarding proper rigging.

6. A label shall be affixed on all electrical control enclosures. The label shall state that lockout/tagout is required before removing cover or servicing of equipment, as well as not to operate the crane without the cover in place.

7. For mobile cranes, a durable rating chart(s) with legible letters and figures shall be provided with each crane and attached in a location accessible to the operator while at the controls. The data and information to be provided on these charts shall include, but not be limited to, the following:

   a. A full and complete range of manufacturer's crane load ratings at all stated operating radii, boom angles, work areas, boom lengths and configurations, jib lengths and angles (or offset), as well as alternate ratings for use and non-use of optional equipment on the crane such as outriggers and extra counterweights, which affect ratings.

   b. A work area chart for which capacities are listed in the load rating chart.

   c. Where ratings are limited by structural, hydraulic, or factors other than stability, the limitations shall be shown and emphasized on the rating charts.

   d. In areas where no load is to be handled, the work area figure and load rating chart shall so state.

   e. Recommended reeving for the hoist lines shall be shown.

   f. If the weight of any portion of the hoist rope is required to be considered as part of the crane's lifted load, the method for determining such rope weight shall be provided.

8. No crane shall be loaded beyond the specifications of the load rating chart, except for test purposes. The load to be lifted shall be within the rated capacity of the crane in its

existing configuration. When loads that are not accurately known are to be lifted, the designated person responsible for supervising the lifting operations shall ascertain that the weight of the load does not exceed the cranes ratings at the maximum radius at which the load is to be handled.

9. The rated load of the hoist shall be marked on the hoist or its load block and shall be legible from the ground. The hoist shall be marked with the manufacturer's identification information, on a plate or label attached to the hoist, or cast, forged, or stamped on the hoist.

10. Each control actuator shall be marked to indicate the direction of resistant movement.

11. The supporting structure or anchoring means shall have a load rating at least equal to that of the hoist.

F. Slings, Ropes, Cables and Other Attachments

1. Defective rigging shall be immediately removed from service and all defects or repairs needed shall be recorded.

2. Safety latches are required on all crane and spreader cable hooks (except for shakeout hooks that are used for their intended purpose).

3. Tag lines should be used unless their use creates an unsafe condition. Glove shall be worn when handling and using a tagline. Taglines shall be non-conductive.

4. Selection and installation of equipment on cranes must meet recommendations of the rope manufacturer, crane manufacturer, or a qualified person.

5. Rigging shall have:
   a. Permanently affixed and legible identification markings as prescribed by the manufacturer that indicate safe working load, and
   b. Shall not be loaded more than its recommended safe working load, and
   c. Shall not be used without affixed, legible identification markings.

6. Rigging equipment, when not in use, shall be removed from the immediate work area so that it does not present a hazard to employees.

7. Rotational resistant ropes may be used at the discretion and under the guidance of a qualified person. Chain or wire rope slings shall not be shortened with knots, bolts, or other makeshift devices.

8. Slings shall be set to avoid slippage, be padded, or protected from the sharp edges of their loads, and slings used in a basket hitch shall have the loads balanced to prevent slippage.

9. All steel chain slings shall have a permanently affixed durable identification stating size, grade, rated capacity, reach, and inspection date. Worn or damaged alloy steel chain slings or attachments shall not be used until repaired. All steel chain slings with cracked or deformed master links, coupling links, or other components shall be

removed from service. Alloy steel chain slings shall be permanently removed from service if heated above 1,000 degrees Fahrenheit (F).

10. Fiber core wire rope slings of all grades should be removed from service if they are exposed to temperatures more than 200 degrees F. Wire rope slings should be removed from service if any of the following are present:
    a. Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
    b. Wear or scraping of one-third the original diameter of outside individual wires.
    c. Kinking, crushing, bird caging, or any damage is noted.
    d. Corrosion of the rope or end attachments.
    e. There is evidence of heat damage.
    f. End attachments are cracked, deformed, or worn.
    g. It is determined that the hooks have been opened for more than 15 percent of the normal throat opening measure at the narrowest point or twisted 10 degrees from the plane of the unbent hook.

11. Metal mesh slings shall have permanently affixed to it a durable marking that states the rated capacity for a vertical basket and choker hitch loadings. If handles are used on metal mesh slings, the rated capacity must be at least equal to the metal fabric and exhibit no deformations after load testing. If handles are attached to fabric, they should be joined so that the rated capacity of the sling is not reduced, the load is evenly distributed across the width of the fabric, and the sharp edges will not damage the fabric. Metal mesh slings shall not be used to lift loads more than their rated capacities. Metal mesh slings which are not impregnated with elastomers may be used in a temperature range of -20F to 550F without decreasing the working load limit. If the sling is impregnated with other materials, then the sling manufacturer's recommendations must be followed. Metal mesh slings must be immediately removed from service, if any of the following conditions are present:
    a. A broken weld or brazed joint along the sling edge.
    b. A reduction in wire diameter of 25 percent due to abrasion or 15 percent due to corrosion.
    c. Lack of flexibility due to distortion of the fabric.
    d. A 15 percent reduction of the original cross-sectional area of metal at any point around the handle eye.
    e. Distortion of the female handle so that the depth of the slot is increased more than 10 percent.
    f. Distortion of either handle so that the width of the eye is decreased more than 10 percent.

12. Natural and Synthetic Fiber Rope Slings
    a. Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from -20F to 180F without decreasing the working load limit. For operations outside of this range, the manufacturer's recommendations should be followed. Fiber rope slings should not be spliced in any manner.

b. Natural and synthetic fiber rope slings shall be immediately removed from service if there is:

   1) Abnormal wear.

   2) Powdered fiber between strands.

   3) Variations in the size or roundness of strands.

   4) Discoloration or rotting.

   5) Distortion of hardware in the sling.

c. Only fiber rope slings made from new rope shall be used. Use of repaired or reconditioned fiber rope slings is prohibited.

d. Each sling should be marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.

e. Nylon web slings should not be used where there are fumes, vapors, sprays, mists, or liquids of acids or phenolic present.

f. Polyester and polypropylene web slings shall not be used where there are fumes, vapors, sprays, mists, or caustics present.

g. Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists, or liquid caustics are present.

h. Synthetic polyester web slings should not be used with temperatures more than 180F. Polypropylene web slings should not be used at temperatures more than 200F.

i. Synthetic web slings shall be immediately removed and destroyed if there are:

   1) Acid or caustic burns.

   2) Melting or charring of any part of the sling surface.

   3) Snags, punctures, tears, or cuts.

   4) Broken or worn stitches.

13. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

14. Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.

15. Shock loading is prohibited.

16. Only use slings with permanent affixed identification markings that show the maximum load for each sling.

G. Bridge Crane Service Platforms (if provided)

1. The dimension of the working space in the vertical direction from the floor surface of the platform to the nearest overhead obstruction shall be a minimum of 48 inches at the location where a person is performing a function while on the platform.

2. Service platforms shall have a clear passageway at least 18 inches wide, except at the bridge drive mechanism where no less than 15 inches of clear passageway shall be allowed.

3. The dimension of the working space in the direction of access to live (energized) electrical parts that are likely to require examination, adjustment, servicing, or maintenance while energized shall be a minimum of 30 inches.

4. The door(s) of electrical control cabinets shall either open at least 90 degrees or be removable.

5. Service platforms shall have a slip-resistant walking surface.

6. Surface platforms shall be provided with guard railings and toe boards.

7. Guard railings shall be at least 42 inches high and shall be provided with an intermediate railing.

H. Contractor Use of Bridge Cranes

1. The contactor must complete and submit OC San's Contractor Release, Waiver of Liability, and Indemnity Agreement to Risk Management for approval.

2. The contractor must submit training verification to Risk Management for use of OC San bridge crane. OC San requires that contractors demonstrate that they have an awareness of safe crane operation. A letter stating that those operating the crane are trained, competent, and qualified to operate the designated crane is sufficient. This letter must be signed by the crane operator's supervisor.

I. Training

1. Crane Operators

   a. Cranes shall only be operated by qualified personnel certified by an accredited certifying entity, such as the National Commission on the Certification of Crane Operators (NCCCO). In addition, they shall only be operated by the following:

      1) Designated and trained persons

      2) Trainees under the direct supervision of a designated person

      3) Maintenance and test personnel when it is necessary in the performance of their duties

      4) Crane inspectors

      5) No one other than personnel specified above shall enter a crane cab or pulpit, apart from persons such as supervisors, whose duties require them to

do so, and then only in the performance of their duties and with the knowledge of the operator or other appointed personnel.

b. Operators of mobile cranes above 7.5 tons lifting capacity, or 25 feet of boom must carry certification during crane operation. In cases where other personnel (e.g., contractors) will be using these devices, they shall be similarly trained. The certification exemption for cranes less than 7.5 tons applies to maintenance tasks for general industry, not construction tasks as defined by OSHA. An employee who is not certified is allowed to operate equipment over 7.5 tons and a boom longer than 25 feet, only as an Operator-in-Training.

c. Each OC San employee (i.e., rigger, signal person, and spotter) involved in crane operations must be trained in the hazards associated with crane hoist/lifting operations. Training shall include a classroom and practical examination covering, at minimum, the following topics:

1) General Crane Safety,

2) Performing Crane Inspections,

3) Attaching, raising, lowering, and moving loads,

4) Hand signals,

5) Overhead power line awareness,

6) Crush/pinch points prevention,

7) Fall Protection, and

8) Lockout/Tagout procedures.

9) Training on specific controls for the crane, slings used with loads, and handling instructions.

10) Each employee must be evaluated (e.g., tested) on the training topic to ensure the training provided is understood.

2. Designated Signal Persons

a. A Designated Signal Person shall:

1) Complete training from qualified trainer (mobile and tower cranes only).

2) Know, understand, and be competent in the types of signals used.

3) Have a basic understanding of the equipment operation and limitation.

4) Be competent in the Standard Methods for hand signals, understand signal person requirements contained in Attachment A.

3. Qualified Riggers

a. A Qualified Rigger shall:

1) Be trained in the selection, inspection, and rigging practices for the rigging devices used.

2) Demonstrate the ability to solve problems related to rigging loads.

3) Appropriately trained for hazards (e.g., confined space) encountered during rigging operation.

4. Mechanics Performing Maintenance

   a. A Mechanic performing maintenance on a crane shall:

      1) Operate equipment only when, operation is critical for a maintenance task.

      2) Be familiar with the equipment or operate under the direct supervision of a qualified operator.

      3) Be qualified to perform maintenance on the equipment.

VI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VII. References

Cal/OSHA, Title 8 Sections 4884 -5048, General Industry Safety Orders.

Cal/OSHA, Title 8 Sections 1604-1619.4 and 1718, Construction Safety Orders.

American Society of Mechanical Engineers (ASME) B30.17-2006 and B30.2 -2011, Overhead and Gantry Cranes.

American Society of Mechanical Engineers (ASME) B30.5-2007, Mobile and Locomotive Cranes.

American Society of Mechanical Engineers (ASME) B30.9-2010, Slings.

American Society of Mechanical Engineers (ASME) B30.10-2009, Hooks.

American Society of Mechanical Engineers (ASME) B30.23-2011, Personnel Lifting Systems.

American Society of Mechanical Engineers (ASME) B30.16-2009, Overhead Hoists (Underhung).

OSHA Standard Interpretation of 1910.179, Use of Bridge and Gantry Cranes as Work Platforms, 4/6/93, and Guidelines for Platforms and Walkways on Cranes, 3/24/99.

VIII. Revision History

Version	Date	By	Reason
1.0	01/15/2013	Collins, Rodney	New
2.0	09/21/2015	Davis, Heather	Arcadis recommendations implemented.
3.0	08/06/2020	Hachim, Sabrina Frattali, John	Periodic Update – Refer to Program Change Log
4.0	12/07/2021	Stone, Jereme	Annual Program Update – Refer to Program Change Log

ATTACHMENT A

Figure A-1: Recommended Hand Signals for Controlling Crane Operations

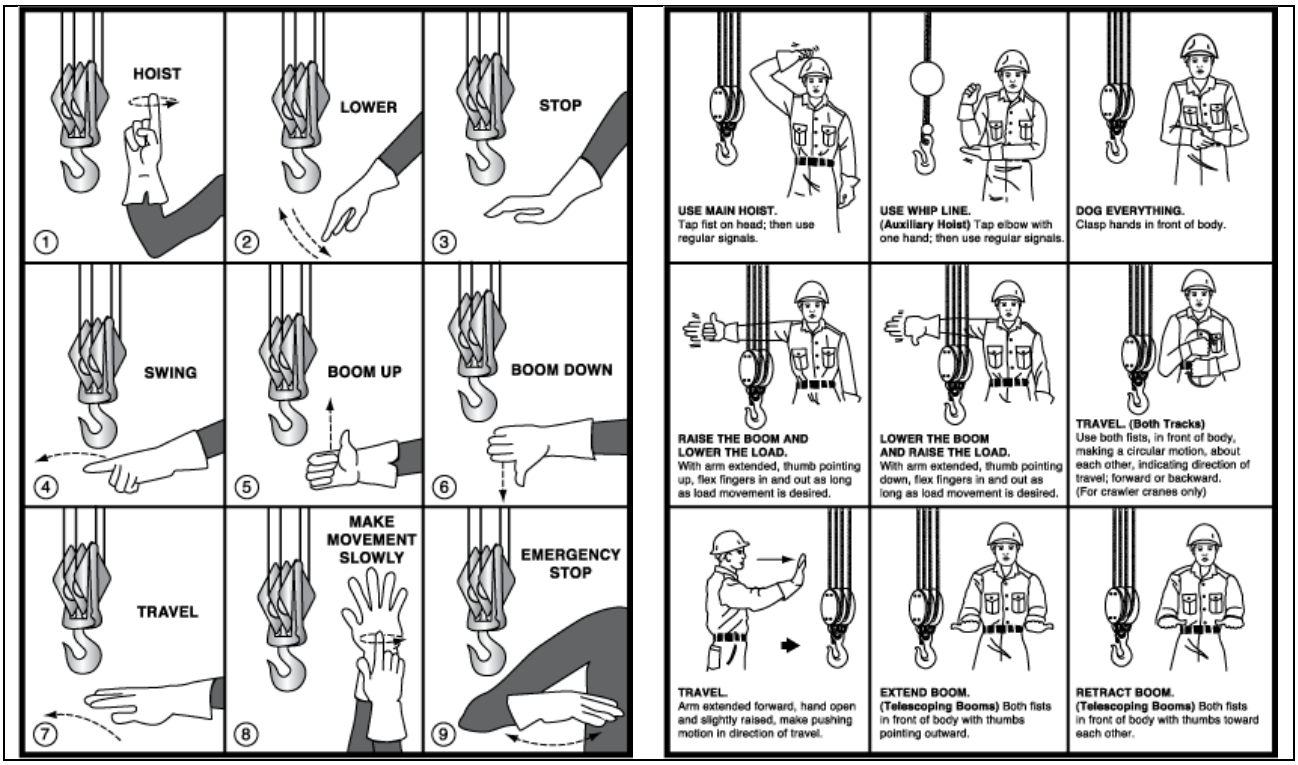


Figure A-2: Recommended Hand Signals for Boom Equipment Operations

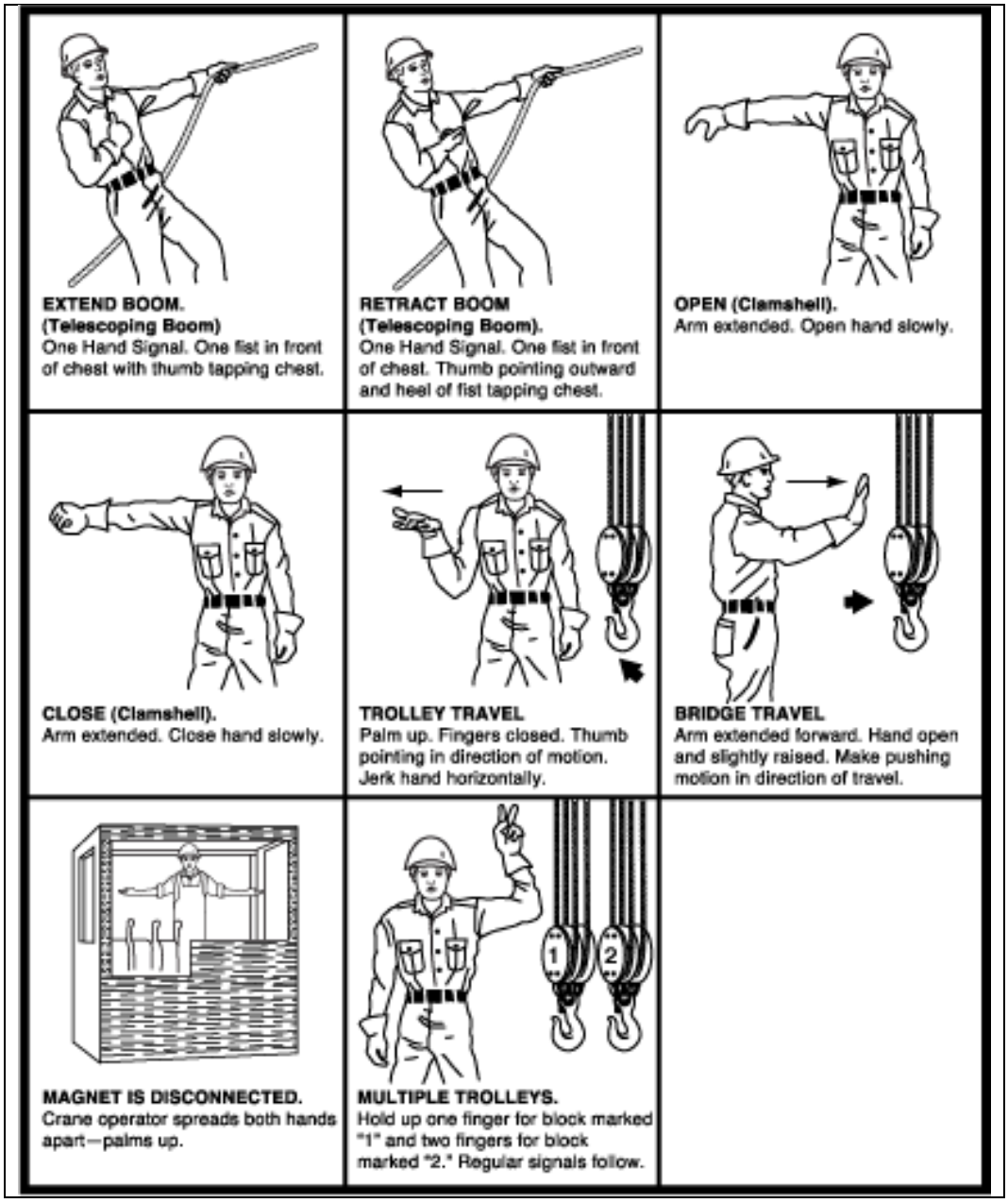
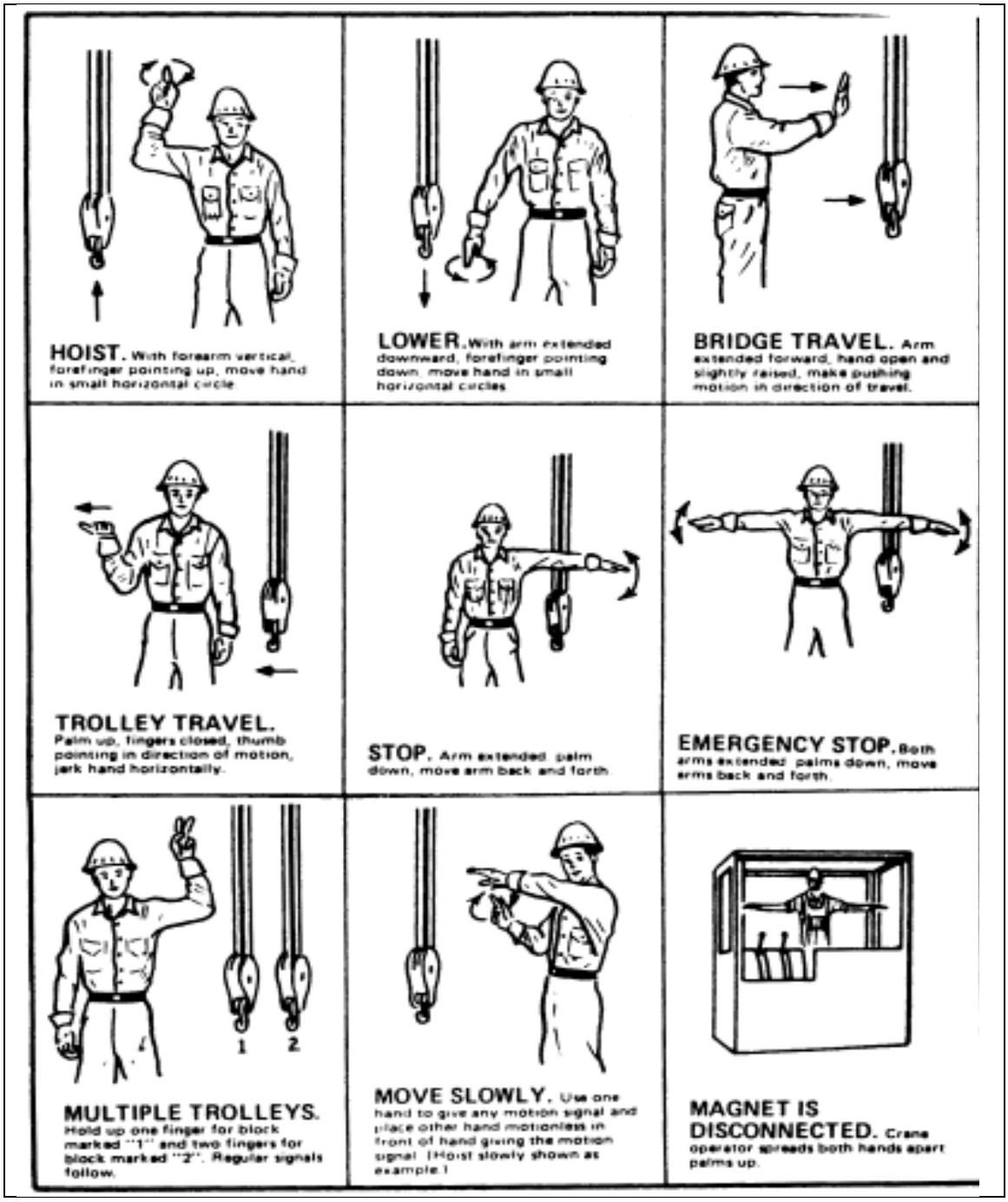


Figure A-3: Recommended Hand Signals for Overhead Crane Operations



ATTACHMENT B

Safety Devices and Operational Aids

The following safety devices and operational aids are required on all cranes covered by this policy, except gantry and overhead cranes, and cranes with less than 1-ton lift capacity. In addition, boom hoist limiting devices are not required for mobile cranes with a rated capacity of 3 tons or less.

Safety / Operational Device	**Mobile Crane**		**Overhead & Gantry**	
	Hydraulic	Lattice	Traveling	Stationary
horn/ warning device	x	x	x	
crane level indicator	x	x		
check valve on jacks	x	x		
load weighing device	x	x		
outrigger position sensor	x	x		
load chart	x	x	x	x
load moment indicator	x	x		
drum rotation indicator	x	x		
boom length indicator	x	x		
boom angle indicator	x	x		
boom hoist limiting device *	x	x		
boom stop		x		
anti-two block device	x	x		
locks on foot brake	x	x		
jib limiting device	x	x		
jib stop	x	x		
jib angle indicator	x	x		

* Boom hoist limiting devices are not required for mobile cranes with a rated capacity of 3 tons or less.

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-202 (Ver. 6) Incident Reporting and Investigation
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

A. The Orange County Sanitation District (OC San) is committed to preventing workplace injuries and illness among employees, contractors, visitors, and the public. The purpose of the Incident Reporting and Investigation Policy is to outline the process for reporting incidents and to ensure incident investigations are properly conducted to determine contributing factors and root cause(s) allowing for the proper development and implementation of corrective action(s) to prevent similar or more serious incidents from recurring.

B. It is OC San policy that:

1. All hazard recognition events, near misses and incidents are immediately reported.
2. Incidents involving non-emergency work-related injuries are reported to Company Nurse first to ensure proper medical care and management.
3. All near misses and incidents are investigated. The level of investigation is based on the severity of the outcome or potential outcomes of the incident or near miss.
4. All investigations result in learning that is communicated to appropriate staff.
5. Some investigations may result in corrective action and/or discipline up to and including termination.

II. Background

A. OC San has developed this procedure in accordance with the California Occupational Safety and Health Administration (Cal/OSHA) Injury and Illness Prevention Program requirements for investigating occupational injury or illness (Title 8, California Code of Regulations (CCR), Section 3203(a)(5)).

B. The type of incidents reported and investigated under the Incident Reporting and Investigation Policy include, but are not limited to:

- Work-related injuries and illnesses resulting in fatality, permanent disability, lost time, restricted duty, medical treatment, and first aid.
- Near misses
- Hazard recognition events
- Vehicle accidents

- Property damage
- Utility strikes
- Environmental releases and spills
- Regulatory violations
- Lock Out Tag Out (LOTO) violations
- Negligence

C. Incidents incurred by contractors and visitors must be reported and investigated in accordance with this policy and the OC San Contractor Safety Standards.

III. Definitions

Accident - An unplanned, undesired event, not necessarily resulting in injury, but damaging to property and/or interrupting the activity in plant process, maintenance, or construction.

Contractor - A company performing work for OC San under a contract. This includes subcontractors.

Company Nurse – OC San's nurse line for work-related injuries and illnesses.

First Aid - Any one-time treatment, and any follow-up visit for the purpose of observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care. Such one-time treatment, and follow-up visit for the purpose of observation, is considered first aid even though provided by a physician or licensed health care professional (PLHCP).

Hazard Recognition – Identification of workplace hazards.

Incident – Unplanned, undesired event that adversely affects completion of a task.

Observation – An observation is an unsafe condition (hazard) that requires corrective action. If not corrected, the hazard could lead to a near miss, incident, or injury. The hazard is generally addressed by the employee who observed the unsafe condition. An example of an observation requiring corrective action is spilled water or coffee on the break room floor. The observer would self-correct by cleaning up the spill. Some corrective actions may require submission of a Maximo or Fleet service request. Please work with your supervisor to determine if a service request is required. For example, a malfunctioning seatbelt on a forklift would not only require the forklift to be tagged out of service, but also submission of a service request so the seatbelt can be repaired. Observation reports can also be submitted to recognize employees who go above and beyond to make the workplace safer.

Near Miss – incident where no property was damaged and no personal injury sustained, but where, give a slight shift in time or position, damaged and/or injury easily could have occurred.

Recordable Injury - Any occupational injuries or illnesses which result in fatalities, regardless of the time between the injury and death, or the length of the illness; or lost workday cases, other than fatalities, that result in lost workdays; or nonfatal cases without lost workdays which result in transfer to another job or termination of employment, require medical treatment (other than first aid) or involve loss of consciousness or restriction of work or motion. This category

also includes any diagnosed occupational illnesses which are reported to the employer but are not classified as fatalities or lost workday cases.

Reportable Injury - Serious injury, illness, or death, of an employee occurring in a place of employment or in connection with any employment that requires the employer to notify Cal/OSHA of the injury within 8 hours of occurrence. Inpatient hospitalization, beyond medical observation and diagnostic testing, amputations, loss of an eye, or serious degree of permanent disfigurement are automatic triggers for reporting to Cal/OSHA.

Root Cause Analysis - Is a structured approach to identifying the factors that resulted in the nature, the magnitude, the location, and the timing of the harmful outcomes (consequences) of one or more past events to identify what behaviors, actions, inactions, or conditions need to be changed to prevent recurrence of similar harmful outcomes and to identify the lessons to be learned to promote the achievement of better consequences.

Serious Injury or Illness - Means any injury or illness occurring in a place of employment or in connection with any employment which requires inpatient hospitalization for a period more than 24 hours for other than medical observation or in which an employee suffers a loss of any member of the body or suffers any serious degree of permanent disfigurement.

Vehicle - is a device by which any person or property may be propelled, moved, or drawn upon a highway, including devices moved exclusively by human power or used exclusively upon stationary rails or tracks. This includes electric carts and bicycles.

IV. Responsibilities

A. Risk Management

1. Shall develop, maintain, and administer the Incident Reporting and Investigation Policy.

2. Shall maintain incident reports and Cal/OSHA recordkeeping activities.

3. Will coordinate the activities for supplemental incident investigations, if determined necessary.

4. Shall report to Cal/OSHA any serious injury, illness, or death of an employee.

5. Shall update the OSHA 300 log and indicate recordable/reportable injuries on the log and summary.

6. Shall provide training for employees on proper incident investigation techniques to include root cause analysis.

7. Will review the Incident Reporting and Investigation Policy annually and make updates where needed.

B. Managers and Supervisors

1. Shall complete incident investigations in accordance with this policy.

2. Will be responsible for leading the investigation of an incident to identify contributing factors, root causes, and assignment of corrective actions.

3. Shall communicate the policy requirements with staff.

4. Shall investigate incidents in a manner that is timely and appropriate to the circumstances and severity of the incident.

5. Shall ensure all corrective actions are completed to prevent reoccurrence.

6. Shall periodically (quarterly) remind employees to report incidents, observations, and near misses.

7. Shall advise new and returning employees of the requirement to report all incidents and near misses.

8. Assist employees with submitting electronic incident reports using OC San's incident management system.

C. Employees

1. Shall immediately report incidents and near misses to their supervisor (or manager) and Risk Management.

2. Shall submit the electronic incident reports in OC San's incident management system, Cority, as soon as possible and no later than 24 hours from the time of incident.

3. Shall fully cooperate with management, Risk Management, Human Resources, and subject matter experts participating in the investigation.

4. May request bargaining unit representation during the incident investigation.

5. Shall promptly complete and return all paperwork regarding the incident as required.

6. Shall participate in the investigation of an incident.

7. Shall execute corrective actions as assigned.

8. Attendance during the incident investigation is mandatory unless incapable because of bona-fide injury or illness.

V. Procedure

A. Stop Work Authority

1. All employees, contractors, and visitors have the authority and responsibility to stop work in any situation when the hazards and risks associated with the work being performed is not clearly established or controlled. Work may be stopped until it is determined that it is safe to resume.

2. Immediately following a near miss or incident, stop work until it is determined that it is safe to resume. If a person sustains a serious injury, or if the incident is classified as a significant near miss, the operation must be stopped, and the investigation initiated immediately.

B. Incident Notification

1. Employees shall immediately report near miss and incidents to their supervisor and Risk Management.

2. Employees shall make injury notifications and response according to OC San Medical Program (SOP-111) and Section VI below.

3. Cal/OSHA requires any serious injury, illness, or fatality that occurs at the workplace regardless of whether it was work-related or not to be reported to the Cal/OSHA District office. Cal/OSHA defines a serious injury as any incident requiring inpatient hospitalization (other than medical observation or diagnostic testing) or in which an employee suffers an amputation, loss of the eye, or any serious degree of permanent disfigurement. Cal/OSHA notifications will be made by the Risk Management Safety and Health Supervisor (or designee), Human Resources and Risk Manager, or Director of Human Resources. These notifications shall be made to Cal/OSHA as soon as practically possible but not longer than 8 hours after knowledge of incident. These reportable injuries must be recorded on Cal/OSHA Form 300. They can be lined out or removed if determined not to be work related.

4. Incidents that result in severe or catastrophic injury or hospitalization, fatality, moderate to server property damage, utility strike, motor vehicle accidents, missing persons, or incidents that generate media coverage, notifications to the following shall be considered:

   a. Public Affairs Office

   b. Legal Counsel

   c. Human Resources

C. Company Nurse Intervention/Case Management

1. Company Nurse shall be contacted for every non-emergency, work-related injury or illness by the OC San employee via the Company Nurse reporting hotline number (877) 518-6702, (search code: OC San) to ensure proper medical management of the injury for the OC San employee.

2. Company Nurse will manage the case along with OC San's Workers Compensation Third Party Administrator (TPA) to ensure the appropriate and effective care is provided for the employee.

D. Investigation Team

1. Investigation Teams will vary depending on the type of the near miss or incident. Recommended members are as follows:

   a. Near Miss – employee involved, witness, supervisor

   b. Vehicle Accident – employee involved, witness, supervisor, Risk Management

c. Property Damage / Utility Strike – employee involved, witness, supervisor, Risk Management

d. Significant Near Miss – employee involved, witness, supervisor, manager, Risk Management

e. First Aid – employee involved, witness, supervisor, Risk Management

f. Medical Treatment Beyond First Aid – employee involved, witness, supervisor, manager, Risk Management

g. Serious Injury or Fatality – employee involved, witness, supervisor, manager, Risk Management, Human Resources

2. Near misses and incidents involving lockout/tagout, confined space, working at elevated locations, machine guarding and barricading, operation of mobile equipment, suspended loads, equipment and pipe opening, hot work, excavations, and NFPA 70E are incident categories that lead to significant near misses, serious injuries, and fatalities. These categories will require a comprehensive investigation, which may lead to discipline up to and including termination.

3. The members of the Incident Investigation Team shall receive training in conducting an incident investigation.

4. Subject matter experts (i.e., Engineer, third-party consultant) can be added to the investigation as needed.

E. Investigation Process

1. Fact Gathering

a. Information or conditions that can change with time must be captured immediately. This may include taking pictures of damage before it is repaired and of the work area before conditions change and getting names of witnesses before they leave the area. The longer the delay in examining the incident scene and interviewing witnesses the greater the possibility of obtaining erroneous or incomplete information.

b. For minor incidents, the information may be gathered by the supervisor or other involved personnel immediately following the incident.

c. The severity or potential severity of the incident will determine when the formal investigation should be initiated.

d. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the incident, identify contributing conditions, determine the root cause, and develop solutions.

e. More complex situations may require the investigation team to revisit the incident site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

f. For damaged equipment or property incidents, photographs or videos of the scene should be taken from all sides and from various distances. Sketches or drawings could also be pertinent to the investigation.

2. Starting an Investigation

a. The supervisor is responsible for initiating the investigation process. Depending on severity, Risk Management will initiate the investigation process at their discretion.

b. The incident investigation is initiated once the area is secure, injured people have received appropriate medical attention, and appropriate notifications have been made.

c. During the investigation, an analysis shall be carried out to identify failures or noncompliance with the safety and health management systems. The analysis includes but is not limited to review of safe work procedures, job safety analysis, related safety programs, training records, inspection records, simultaneous operations, equipment records, weather conditions, personnel policies, and procedures, as well as relevant evidence gathered during the course of the investigation.

3. Description of Incident

   a. It is critical to accurately describe what happened. Do not speculate on causes, state the facts. The description should be clear and concise.

      1) For example: “Technician opened electrical panel without applying lockout tagout. Technician was not wearing arc flash PPE and did not obtain energized electrical work permit. No injuries were reported”.

   b. Do not use people names when describing the incident. The names of individuals involved can be listed in the Witness and Contacts tab of the incident report.

4. Determining Contributing Factors

   a. Facts can be contributing factors.

   b. Once all contributing factors have been identified, determine which contributing factor(s) were primary in the event occurring (key contributing factor). Contributing factors are not root causes.

5. Determining Root Causes of the key Contributing Factors

   a. OC San utilizes the Five Why’s root cause analysis to explore cause and effect relationships underlying a particular problem. Any near miss or incident may have one or more root causes that will be categorized.

   b. The Investigation Team will ask questions starting with Why, What, How and/or When until meaningful conclusions are reached.

      Example Problem: My car will not start.

      - Why? – The battery is dead.
      - Why? – The alternator is not functioning.
      - Why? – The alternator belt is broken.
      - Why? – The alternator belt was well beyond its useful service life and has never been replaced.
      - Why? – I have not been maintaining my car according to the recommended service schedule.

c. They Five Why system is used to uncover issues that may be contributing to the incidents that occur and to identify questionable behaviors identified during an investigation.

d. Investigative interviews of witnesses and subjects may be recording to preserve an accurate record of events.

e. Root cause categories focus on training or competency, adherence to standards, availability of standards or procedures, communications, tools, equipment, and factors outside of OC San control.

6. Development of Solutions

a. Each root cause must be addressed by a solution with a responsible person identified.

b. The Investigation Team cannot identify a root cause and then make no recommendation to address it.

c. The affected managers and supervisors are responsible for implementation of root cause corrective actions recommended by the Investigation Team.

d. The affected mangers, supervisors, and Risk Management may recommend disciplinary action of involved parties but shall not determine the type or magnitude of the action. This shall remain the responsibility of the employee's direct manager or supervisor and Human Resources.

e. After identifying the root cause(s), solutions are developed with a responsible person identified and notified for solution implementation with a set due date for completion.

f. Job Safety Analysis (JSAs), policies and procedures, safe work practices, and other safety documentation may require updates to prevent reoccurrence of incident.

g. Solutions should be practical, cost beneficial, and sustainable for the long term. The solutions should focus on factors that can be controlled by the individual or supervisor. Effective solutions typically are "SMART" solutions:

- Specific
- Measurable/observable
- Achievable
- Relevant
- Timely

7. Review Process and Validation

a. Review and follow-up on incident investigations is important to verify the effectiveness of the process.

b. Quality reviews of incident investigations offer an opportunity to provide positive feedback or constructive advice for continued improvement.

c. Employees can follow-up on near miss and incident investigations by verifying that the solutions have been implemented and validating that the solutions have adequately addressed the root cause(s) of the incident.

F. Closeout of Incident Investigation

1. All near misses and incidents have three levels of investigation/review that must be completed within an appropriate time frame:
   a. Level 1 - Investigation Supervisor
      1) Performed by the supervisor of the person involved or injured.
      2) Responsible for formulating the investigation Team and executing the Investigation Process.
   b. Level 2 – Investigation Manager
      1) Completed after the investigation is marked complete by the Investigation Supervisor.
      2) Responsible for verifying the investigation is thorough, completed as required by this policy, appropriately identifies the root causes, solutions are identified that will prevent reoccurrence, and solutions are achievable.
      3) The Investigation Manager should be involved during Level 1 investigation process.
   c. Level 3 – Risk Management
      1) Performed after the investigation is approved by the Investigation Manager.
      2) Risk Management will perform a quality control review of the investigation to ensure that it aligns with federal, state, and local regulations, as well as OC San policy. Risk Management will also ensure that all required fields for data collection and analysis is completed.
      3) Risk Management will be involved during Level 1 investigation process.
2. Targeted Time Frames

Near Miss/Incident Type	Investigation Supervisor	Investigation Manager	Risk Management
Near Miss	2 Weeks	1 Week	1 Week
Vehicle Accident / Property Damage	2 Weeks	1 Week	1 Week
Utility Strike	1 Week	1 Week	1 Week
Significant Near Miss	1 Week	1 Week	1 Week
First Aid	1 Week	1 Week	1 Week
Medical Treatment	72 Hours	1 Week	1 Week
Serious Injury or Fatality	72 Hours	48 Hours	24 Hours

a. The times listed above are times that the near miss or incident can sit in one's queue. Completion times vary depending on the incident level, but all should be done as soon as possible.

b. Deviations from the targeted time frames shall be discussed with Risk Management.

VI. Injuries

A. If the incident is serious and the employee is unable to leave the scene of the incident, help shall be summoned, using the extension 2222 emergency number or the control center for Plant 1 (714) 593-7133 or Plant 2 (714) 593-7677.

B. The Control Center shall notify the Medical Response Team if the incident is at Plant 1 or Plant 2, and outside medical services as required (911).

C. The Plant 1 Control Center or Plant 2 Operations Center shall dispatch personnel to meet outside medical services at the front gate as necessary and escort them to the incident site.

D. The employee or another employee shall notify the injured person's supervisor of the incident.

E. After the injured person is tended to, an investigation shall be started by the supervisor as soon as possible.

VII. Vehicle Accidents

A. After a vehicle accident, if safe, stop and determine possible damage. Avoid obstructing traffic if possible. The vehicle shall be moved to a safe location as soon as possible.

B. Aid the injured and see to it that they receive medical attention as soon as possible by notifying Control Center (onsite – x2222) or contacting local emergency medical service personnel (offsite - 911).

C. Notify your supervisor or manager of the accident. Supervisor or manager shall notify Fleet Services and Risk Management.

D. A police report is needed when the incident involves the public or non-OC San property. If the police do not respond, the employee should obtain all pertinent information available from the other driver and the incident scene and then go to the police department with local jurisdiction to file a report.

E. Identify as many witnesses as possible and obtain their name, address, and home and work phone numbers.

F. Take pictures of the accident scene, including pictures of every side of the vehicles involved, from a distance, etc.

G. Do not discuss the incident with anyone other than the police and OC San personnel.

H. Provide only your name, agency name and address, and work telephone number.

I. Obtain a business card from the police officer and ask them to record the accident case number on the card.

J. The driver, and each employee passenger, and each employee witness should assist in completion of the Vehicle Accident Report (unless involved parties are incapacitated or deceased) during the shift in which the incident occurred. Applicable drug testing requirements for drivers involved in accidents shall apply in accordance with OC San's Substance Abuse Policy.

VIII. Training

A. All employees will receive incident reporting and investigation training during the new employee hire orientation.

IX. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

X. REFERENCES

California Code of Regulations Title 8, §3203. Injury and Illness Prevention Program

California Code of Regulations Title 8, §342, Reporting Work-Connected Fatalities and Serious Injuries

OC San Personnel Policy, Vehicle Usage, Policy Number 5.19

XI. Revision History

Version	Date	By	Reason
1.0	09/25/2002	N/A	New
2.0	10/26/2005	N/A	Periodic Update
3.0	01/04/2006	Matte, J.	Periodic Update
4.0	04/18/2013	Bauer, Wesley	Periodic Update
5.0	09/15/2020	Frattali, John Hachim, Sabrina	Periodic Update – Refer to Program Change Log
6.0	12/07/2021	Huynh, Brian	Annual Program Update – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-203 (Ver. 3) Ergonomics Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of the Ergonomics Program is to protect Orange County Sanitation District (OC San) staff and contract employees from work-related musculoskeletal disorders (WMSDs), promote awareness of ergonomic risk factors, increase proper reporting of signs and symptoms of musculoskeletal disorders (MSDs), and implement an effective training program.

The Ergonomics Program will provide a comprehensive approach to detect, correct, and prevent musculoskeletal disorders (MSDs). This will be accomplished by training employees in the awareness of and proper reporting of ergonomic risk factors and early reporting of signs and symptoms of MSDs, reviewing incident reports, conducting workplace ergonomic risk assessments, employing engineering and administrative ergonomic hazard reduction controls, and educating employees about the potential effects of ergonomic risk exposures.

II. Background

OC San has developed this Ergonomics Program in accordance with the state of California Occupational Safety and Health Administration (Cal-OSHA) regulations, including *Repetitive Motion Injuries* (Title 8, California Code of Regulations (CCR), Section 5110).

III. Definitions

Administrative Controls – Changes in the way that work is assigned or scheduled to reduce the magnitude, frequency, or duration of exposure to ergonomic risk factors. Examples of administrative controls for musculoskeletal disorders may include employee rotation, job task broadening, alternative tasks, employer-authorized changes in work pace.

Engineering Controls – Methods of controlling worker exposure to risk factors by redesigning equipment, tools, and workstations. Engineering controls are part of hazard prevention and control. Engineering controls are physical changes to a job that reduce MSD hazards.

Ergonomics – the science of fitting workplace conditions and job demands to the capabilities of the working population.

Health Care Professional (HCP) – physician or other licensed health care professional whose legally permitted scope of practice (e.g., license, registration, or certification) allows them to provide independently or to be delegated the responsibility to carry out some or all the MSD management or Return to Work requirements.

Identical Work Activity - Employees performing the same repetitive motion task, such as but not limited to, word processing, assembly, or loading.

Job Safety Analysis (JSA) - is a safety procedure which helps integrate accepted safety and health principles and practices into a task or job operation

OSHA-300 form - A form that the OC San is required to complete, fill out, and tun in for all employee injuries that shall be recorded in accordance with 8 CCR 14300

Musculoskeletal Disorders (MSD) – An injury or disorder of the muscles, nerves, tendons, joints, ligaments, cartilage, or spinal disks that are caused by sudden, sustained, or repetitive physical exertion, are not the result of any instantaneous non-exertion event (e.g., slips, trips, or falls, motor vehicle accidents), and range in severity from mild/occasional to intense/chronic pain as diagnosed by a health care professional.

MSD Hazard - The presence of risk factors in a job which occur at a magnitude, duration, or frequency reasonably likely to cause MSDs that result in work restrictions or medical treatment beyond first aid.

Personal Protective Equipment (PPE) – Gloves, hard hats, eye protection, kneepads and other equipment that may help reduce hazards until other controls can be implemented, or to supplement existing controls. Examples of PPE include vibration-reduction gloves and carpet layer's knee pads.

Risk Factors – An aspect of a job that increases the worker's chance of getting a work-related musculoskeletal disorder from force, awkward posture, repetition, vibration, and contact stress.

Work Practice Controls - Changes in the way an employee performs the physical work activities of a job that reduce or control exposure to MSD hazards. Work practice controls involve procedures and methods for safe work. Example of a work practice control is the use of two-person lift teams. Work practice controls also include procedures for safe and proper work that are used to reduce the duration, frequency, or severity, including training, job rotation and gradual exposure to the work.

Work Related Causation- The repetitive motion injuries were predominantly caused (i.e., 50% or more) by a repetitive job, process, or operation.

Work-related Musculoskeletal Disorders (WMSDs) – MSDs that can be attributed to the work environment and the performance of work. MSDs that are made worse or longer lasting by work conditions requiring lifting, pushing pulling or carrying irregularly shaped objects, maintain awkward or unnatural postures, withstand cold temperatures, withstand vibrations from machines and tools, and increase the intensity, frequency, or duration of activities.

Work Restrictions - Limitations, during the recovery period, on an employee's exposure to MSD hazards. Work restrictions may involve limitations on the work activities of the employee's current job (light duty), transfer to temporary alternative jobs, or temporary removal from the workplace for recovery.

IV. Responsibilities

A. Risk Management

Risk Management will serve as the Program Administrator for the Ergonomics program, which includes:

1. Develop and update the Ergonomics Program in accordance with applicable regulations and guidance documents.
2. Evaluate the effectiveness of this program on an annual basis.
3. Report to and consult with various committees or teams on ergonomic issues.
4. Train employees on methods of early reporting and musculoskeletal disorder signs and symptoms, and ergonomic risk factors and potential harm to their bodies.
5. Prioritize ergonomic evaluations based on available incident rate data.
6. Perform ergonomic risk factor measurements and observations and communicate results to supervision and employees.
7. Support the Ergonomics program with resources and staff.
8. Evaluate ergonomic injuries to help develop long term goals.
9. Maintain records of ergonomic evaluations and recommendations for equipment improvements.

B. Supervision

Supervisors and Managers are key personnel in promoting and maintaining a safe work environment. Supervisory responsibilities related to the Ergonomics Program include:

1. Support and implement corrective measures to identified ergonomic risk factor exposures to reduce or eliminate ergonomic injuries.
2. Establish a safety culture which encourages active employee participation.
3. Encourage early reporting of signs and symptoms of MSDs.
4. Ensure employees follow the health care professionals (HCPs) recommendations regarding work restrictions.
5. Notify Risk Management of ergonomic issues reported by their employees.
6. Notify Risk Management of changes in the workplace processes or equipment that may change (increase or decrease) ergonomic risk factors.
7. Ensure employees have completed required ergonomics training.

C. Employees

Employees are often the first to see or experience ergonomic hazards. Due to firsthand experience and job knowledge, employees are valuable assets in identifying ergonomic hazards and reducing musculoskeletal disorders. Employees are responsible for:

1. Identifying and reporting ergonomic hazards to their supervisor and Risk Management.

2. Reporting early signs and symptoms of musculoskeletal disorders.

3. Follow safe work practices related to their jobs that are intended to reduce ergonomic risks.

4. Abide by the health care professionals' treatment requirements.

5. Actively participate in the recognition, analysis, and abatement of ergonomic risks

V. Procedure

A. Workplace Analysis

A key component of the Ergonomics Program is the identification and evaluation of existing or potential ergonomic hazards. Ergonomic evaluations will be conducted by Risk Management to identify and evaluate WMSDs. Ergonomic evaluations will be completed under the following conditions:

1. Employee requests an evaluation of their office, industrial or laboratory work area.

2. Each job, process, or operation of identical work activity or a representative number of such jobs, processes, or operations of identical work activities shall be evaluated for exposures which have caused RMIs.

3. When early signs or symptoms of a musculoskeletal disorder is reported or if a musculoskeletal disorder injury has occurred while performing a job task.

4. Projects in the design phase to verify ergonomic risk factors are identified and corrected.

B. Hazard Prevention and Control

Once ergonomic hazards have been identified, a control method or combination of control methods will be implemented to control or prevent the hazard. Any exposures that have caused RMIs shall, in a timely manner, be corrected or if not capable of being corrected have the exposures minimized to the extent feasible. The following controls maybe considered:

1. Engineering Controls – where feasible, preferred method for controlling WMSD hazards. Engineering controls are the physical changes to jobs that control exposure to WMSD hazards, which include a physical design change to the workstation, tool and equipment design or selection, adjustability for differing individual capabilities and limitations.

2. Work Practice Controls – Safe work procedures and techniques to reduce the likelihood of exposure to WMSD hazards through alteration of the way the job or physical work is performed, such as proper lifting techniques, proper use of tools, and correct use of ergonomic equipment.

3. Administrative Controls – Procedures and methods instituted by Supervision that significantly reduce daily exposure to WMSD hazards by alternating the way work is performed, which includes the reduction in duration and/or frequency and severity of exposures (e.g., alternative

work scheduling, increased task staffing, job rotation or enlargement, extra relief personnel during peak times, changes of job methods).

4. Personal Protection Equipment – May only be used as an interim control, except where other controls are not feasible.

C. Evaluation

The ergonomic evaluation will evaluate the job, task, processes, or workstation. Once the evaluation has been completed the following may be conducted:

1. Workstation adjustment.

2. Office ergonomic equipment will be recommended.

3. Input devices will be ordered through Information Technology (IT).

4. Job Safety Analysis (JSA) will be conducted.

5. Ordering new tools and equipment

6. A Service Request will be created through MAXIMO

7. Small project request through Engineering

D. Medical Management

OC San will make available prompt and effective medical management whenever an employee has a WMSD. Medical management, including recommended work restrictions, will be provided at no cost to the employee. Medical treatment protocols for the health care professional will establish WMSDs

1. When reports of WMSDs are made, employees will be provided with prompt access to health care professionals for effective evaluation, treatment, and follow-up.

2. Information will be provided to the HCPs to help ensure medical management is effective.

3. Written medical opinion will be obtained from the HCP and the employee will be promptly provided a copy.

E. Training

Training is critical to the success of the Ergonomics Program at OC San. Training and education should give Supervision and employees an understanding of the potential risk of injuries, there causes, symptoms, prevention, and treatment. The OC San training covers the following key concepts:

1. Overview of Ergonomics principles.

2. The signs and symptoms of work-related musculoskeletal disorders, the importance of early reporting symptoms and injuries to their supervisor, and medical management procedures.

3. How to recognize workplace risk factors associated with work-related musculoskeletal disorders and the ways to reduce exposure to those risk factors.

4. Hazard prevention and control measures used to reduce MSDs exposure.

5. Ergonomic regulation and associated responsibility.

6. Methods used by the employer to minimize RMIs

F. Program Evaluation

Risk Management has established procedures and mechanisms to monitor the implementation and effectiveness of the Ergonomics Program and establish baseline measurements. Injury date will be collected, stored, and analyzed through Cority.

VI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that

best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VII. References

Title 8 California Code of Regulations, Section 5110 Repetitive Motion Injuries

VIII. Revision History

Version	Date	By	Reason
1	05/18/2009	Bauer, Wesley	New
2	05/14/2012	Tetsch, Gina	Revision
3	01/14/2020	Stone, Jereme	Periodic Update – Refer to Program Change Log
4	12/08/2021	Stone, Jereme	Annual Program Update – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-205 (Ver. 8) Electrical Safety
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The purpose of this procedure is to protect the Orange County Sanitation District (OC San) staff and contractors exposed to electrical hazards such as electric shock, electrocution, arc flash, arc blasts and fires during the operation, servicing and maintenance of electrical equipment and systems. This plan provides minimum safety requirements and assists in the elimination of accidents which may result from the operation, installation, removal, use and maintenance of electrical equipment and tools.

II. Background

It is the policy of the OC San to protect its employees from occupational injuries by implementing and enforcing safe work practices, including the appointment of qualified persons to manage this program.

OC San has developed this program in accordance with the state of California and Federal Occupational Safety and Health Administration (Cal/OSHA) *Electrical Safety Orders* and the NFPA 70E (National Fire Protection Agency 2018), *Standard for Electrical Safety in the Workplace,* and the California Fire Code (CFC).

III. Applicability

This procedure applies to all work performed at the OC San treatment plants, pump stations and the collection system.

This procedure covers electrical safety related work practices and procedures to protect workers who are exposed to electrical hazards.

This procedure does not address the design and installation of electrical systems and equipment.

This procedure does not apply to equipment that operates at less than 50 volts where it is determined that there will be no increased risk of exposure to electrical burns or explosions due to electric arcs.

IV. Definitions

Approach Boundary, Limited – an approach limit at a distance from an exposed live part within which a shock hazard exists.

Approach Boundary, Restricted – an approach limit at a distance from an exposed live part within which there is an increased risk of shock, due to electrical arc-over combined with inadvertent movement, for personnel working near the live part.

Arc Flash – a release of energy caused by an electric arc. An arc flash hazard may exist when energized electrical conductors are exposed or interacted within a manner that could cause an electric ar. Under normal operating conditions, enclosed energized equipment that has been proper installed and maintained is not likely to pose an arc flash hazard.

Arc Flash Boundary – when an arc flash hazard exists, an approach limit from an arc source at which incident energy equals 1.2 calories per centimeter squared (cal/cm^2), where a person could receive a second degree burn on unprotected skin from one second of exposure.

Arc Flash Hazard – a source of possible injury or damage to health associated with the release of energy cause by an electric arc.

Arc Flash Suit – a complete arc-rated clothing and equipment system that covers the entire body, except for the hands and feet. This includes pants, jacket, and a beekeeper type hood fitted with a face shield.

Arc Rating – the value attributed to materials that describes their performance to exposure to an electrical arc discharge. The arc rating is expressed in calories per square centimeter (cal/cm^2).

Authorized Person – a qualified person delegated to perform specific duties under existing conditions.

Balaclava (sock hood) – an arc-rated hood that protects the neck and head except for the facial area of the eyes and nose.

Barrier – a physical obstruction that is intended to prevent contact with equipment or live parts or to prevent unauthorized access to a work area.

Circuit Breaker – a device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermine overcurrent without damage to itself when proper applied within its rating.

De-energized – free from any electrical connection to a source of potential difference and from electrical charge (voltage), and not having a potential difference from that of earth (grounded or equal to ground).

Electrical Hazard – a dangerous condition such that contact, or equipment failure can result in electric shock, arc flash burn, or blast.

Electrically Safe Work Condition – a state in which an electrical conductor or circuit has been disconnected from energized parts, locked/tagged in accordance with established standards or

policy, tested to verify the absence of voltage, and if necessary, temporarily grounded for personnel protection.

Energized – electrically connected to, or is, a source of voltage.

Exposed (as applied to live parts) – capable of being inadvertently touched or approached nearer than the safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated.

Flash Protection Boundary – an approach limit at a distance from exposed live parts within which a person could receive a second-degree burn if an electrical arc flash were to occur.

High Voltage – a sustained voltage of more than 600 volts.

Incident Energy – the amount of thermal energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. Incident energy is typically expressed in calories per square centimeter (cal/cm^2).

Incident Energy Analysis – a component of the arc flash risk assessment used to predict the incident energy of an arc flash for a specified set of conditions.

Insulated – separated from other conducting surfaces by a dielectric (including air space) offering high resistance to the passage of current.

Motor Control Center – an assembly of one or more enclosed sections having a common power bus and principally containing motor control units.

Normal Operating Condition – a normal operating condition exists when the equipment is properly installed, maintained, and used in accordance with manufacturer's instructions, as well as equipment doors are closed and secured, equipment covers are in place and secured, and there is no evidence of impending failure.

Overcurrent – any current more than the rated current of equipment or the ampacity of a conductor. It may result in an overload, short circuit, or ground fault.

Overload – operation of equipment more than normal, full-load rating, or of a conductor more than rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a circuit or ground fault is not an overload.

Qualified Person – a person, designated by the employer, who has demonstrated skills, experience and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to identify and avoid the hazards involved. Whether an employee is a qualified person will depend upon various circumstances in the workplace. An employee who is undergoing on the job training, and who during such training has demonstrated an ability to perform duties safely at his or her level of training, and who is

under the direct supervision of a qualified person is qualified for the performance of those duties.

Risk Assessment – an overall process that identifies hazards, estimates the potential severity of injury or damage to health, estimates the likelihood of occurrence of injury or damage to health, and determines if protective measures are required.

Shock Hazard – a source of possible injury or damage to health associated with current through the body caused by contact or approach to energized electrical conductors or circuit parts.

Switchgear, Metal-Clad – a switchgear assembly completely enclosed on all sides and top with sheet metal, having drawn-out switching and interrupting devices, and all live parts enclosed within grounded metal compartments.

Switchgear, Metal-Enclosed – a switchgear assembly completely enclosed on all sides and to with sheet metal, containing primary power circuit switching, interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior is provided by doors, removeable covers or both.

Working Near (live parts) – any activity inside a Limited Approach Boundary.

Working On (live parts) – any activity with contact with live parts with the hands, feet, or other body parts, with tools, probes, or with test equipment, regardless of the personal protective equipment a person is wearing.

V. Responsibilities

A. Risk Management

- Responsible for the development of this program, which on an annual basis, shall be reviewed and updated, as necessary.
- Provide and coordinate initial training and refresher training.
- Provide technical assistance regarding electrical safety hazards.
- Work with the Division managers and supervisors to select appropriate PPE to be worn by employees based on identified hazards of specific electrical work.
- Ensure managers and supervisors are trained on the safety and health hazards to which employees under their direction or supervision may be exposed.
- Conduct periodic regulatory audits of electrical operations and equipment to ensure compliance with this procedure.
- Communicate procedure inclusion/changes in a timely manner to all staff.

B. Supervision

- Ensure that each employee participating in electrical work participates in appropriate electrical training, which should include NFPA-70E training. Only Qualified and Authorized Electricians shall perform electrical work. Employees shall be current in

equipment-specific training before requesting they perform a required task under this procedure.
- Ensure that employees conduct operations in compliance with this procedure.
- Ensure energized electrical work is approved by the Electrical Maintenance Supervisor.
- Verify a risk assessment has been completed prior to any work performed on or adjacent to exposed live electrical parts.
- Monitor and enforce employee compliance with electrical safety during job operations.
- Evaluate the work location periodically for any change in hazards that may require a modification to this procedure.
- Notify employees of new and existing hazards in the workplace and provide the appropriate electrically rated PPE and insulated tools for those hazards.
- Ensure that all equipment and PPE required by this procedure is available to employees always.
- Verify panel schedules, equipment labels, single-line diagrams (SLDs), and lockout/tagout procedures are provided for employee use.
- Ensure contractors do not use OC San-supplied, electrically rated PPE and insulated tools, and instead provide their own electrically rated PPE and insulated tools appropriate for the job.

C. Qualified Persons

A qualified person is one who has demonstrated skills and knowledge in the construction and operation of equipment or a specific work method and is trained to identify and avoid the electrical hazards that might be present with respect to that equipment or work method. Qualified persons shall also be familiar with proper use of special precautionary techniques, electrical policies and procedures, PPE, insulating and shielding materials, and insulated tools and test equipment. Employees can be considered qualified with respect to certain equipment and tasks but still unqualified for others. An employee who is undergoing on-the-job-training and who, during such training, has demonstrated an ability to perform duties safely at his or her level of training and who under the direct supervision of a qualified person is a qualified person for the performance of those duties.

Qualified persons are responsible for the following:

- Shall follow all safety rules, policies, procedures, and specific requirements regarding electrical safety.
- Shall inspect electrical protective equipment before use to ensure the equipment will provide the proper protection.
- Shall place equipment into an electrically safe working condition before releasing the equipment for servicing and maintenance.
- Shall inform supervision of tasks that cannot be performed safely.
- Shall request additional safety equipment and/or other equipment from supervision as needed to ensure ongoing compliance with this procedure.
- Shall verify required training is current prior to performing any task under this procedure.
- Shall wear required PPE and/or arc flash clothing per arc flash analysis.
- Maintain, inspect, and store equipment and PPE as specified by the manufacturer.
- Shall immediately report incidents, near misses, or hazards resulting from activities related to the control of hazardous energy.

- Shall only work on electrical equipment or systems in which they are deemed qualified.

D. Operations

Trained and authorized OC San Plant Operators are considered electrically qualified for safeguarding employees from exposure to electrical hazards using lockout/tagout in accordance with the Control of Hazardous Energy Control Program (SOP-605).

Plant Operators are not to operate any electrical equipment greater than 480-volts such as equipment breakers.

Below are operational standards when working with electrical equipment:

- Do not reset overload relays on a tripped motor starter more than one time on 480-volt or below motor control equipment.
- Operations cannot reset tripped breakers on any electrical equipment.

Plant Operations can operate MCC breakers 480-volts or below on the electrical MCC for lockout/tagout purposes utilizing the following methods:

- Opening and closing a circuit breaker utilizing a remote actuator, where the operator is safely positioned outside of the arc flash boundary, and the operator has received approved training on the use and care for the actuators.
- Staff who are properly trained and issued arc flash suits can open and close circuit breakers for the purpose of lockout/tagout where calculated incident energy is less than 8 calories per centimeter squared (cal/cm2) when utilizing personal protective equipment (PPE) as listed in Section XI.

E. Unqualified Persons

- Employees who work around electrical equipment and appliances.
- Must understand the hazards of electricity and shall be trained in and be familiar with, any electrical safety related practice necessary for their safety.
- Employees are required to follow all safety rules, policies, and procedures regarding electrical safety, and are required to follow OC San policy regarding the use of approved electronic devices and appliances, flexible cords, and use of power cords and strips.

F. Contractors

- Contractors performing electrical work must have established electrical safety procedures that comply with the Cal/OSHA, NFPA, and CFC requirements and meet or exceed the requirements of this program.
- Contractors must follow their electrical safety procedures when performing any work and should only perform electrical work that has been authorized.
- Contractors must follow all applicable regulations for the control of hazardous energy, as well as the OC San Control of Hazardous Energy Program (SOP-605), where applicable.
- Contractors shall ensure that its employees are instructed per NFPA-70E Article 110.2(A) and trained in the identification of electrical hazards, work practices and safety-related work rules required by OC San. Retraining shall be provided at intervals not to

exceed 3 years. Training shall be classroom, on-the-job, or a combination of both. Contractors shall provide proof of training for qualified persons.
- A license, diploma, or certificate does not necessarily make you a qualified person under requirements of NFPA 70E.
- Contractors shall advise OC San of any unique hazards presented by their work, including any measures to correct violations reported by OC San from reoccurrence.
- Contractors shall establish and implement an assured equipment grounding conductor program to cover all cord sets and receptacles which are not part of the permanent wiring of OC San building or structures and equipment connected by cord and plug.

VI. Electrical Safety Program Principles

The electrical safety program principles, include, but are not limited to, the following:

- Protect the employee from shock, burns, blast, and other hazards due to the working environment.
- De-energize equipment and place into an electrically safe working condition before working on it, if possible.
- Plan every job and document first-time procedures.
- Anticipate unexpected events.
- Identify and minimize the hazards.
- Inspect and evaluate the condition of all electrical equipment in accordance with OSHA Assured Equipment Grounding Protection Program.
- Maintain the electrical equipment's insulation and enclosure integrity.
- Use the right tools for the job.
- Assess employee's abilities and train for deficiencies.

VII. General Requirements for Electrical Safety-Related Work Practices

A. Electrical Safety Program Controls

The electrical safety program has the following basic controls or rules for safe electrical work:

- Exposed energized electrical conductors or circuit parts above 50 volts to ground are considered electrically hazardous and requires the proper PPE and procedures.
- Energizing and deenergizing an electrical conductor or circuit part is a potentially hazardous task.
- Perform a risk assessment to identify the hazards and develop plans to eliminate or control the hazards.
- Employees are trained to be qualified to work in an environment influenced by the presence of electrical energy.
- Identify and categorize tasks to be performed on or near exposed energized electrical conductors and circuit parts.
- Use a logical approach to determine potential hazards of each task.
- Identify and use precautions appropriate to the working environment.
- Unqualified persons shall not be permitted to enter work zones where there are exposed live parts.

B. Electrical Safety Program Procedures

OC San requires safety procedures to be developed and implemented by qualified employees. It is the qualified employee's responsibility to verify the suitability of these documents for changing conditions and specific requirements of the work. The qualified employee is required to review and modify each procedure prior to starting any work. The qualified employee is also responsible for notifying OC San supervision of any required corrections to the procedures for document revision.

1. Master Electrical Safety Procedures

Electrical safety procedures have been developed for the application of protective grounding, working on high voltage switchgear, low voltage switchgear, and low voltage motor control centers, and diagnostic testing of electrical equipment. These procedures are maintained by the electrical maintenance division. The procedures contain the following information:

- Purpose of task
- Qualification and number of employees to be involved
- Nature of hazard and extent of risk
- Limits of approach
- Safe work practices to be utilized
- Personal protective equipment involved
- Insulating materials and tools involved
- Special precautionary techniques
- Electrical diagrams
- Equipment details
- Sketches/pictures of unique features
- Reference data

2. Energy Control Procedures

Energy Control Procedures (ECPs) shall be utilized for the safe de-energization of machinery, equipment and/or OC San facilities. The OC San Control of Hazardous Energy (LOTO) Program (SOP-605) shall be followed. Many specific LOTO's already exist and are stored in OC San's Maximo system. When a LOTO does not exist for a specific situation, one shall be developed before any work begins.

3. Switching Procedures

Switching procedures have been developed for each 12kV switchgear at each of the plants. These procedures provide the systematic process to safety switch the switchgears from one mode to another. These procedures are available through the Electrical Maintenance Supervisor at each plant. The qualified person must verify the accuracy of the procedure before use.

C. Risk Assessments

Risk assessments must be completed for all work on or adjacent to electrical systems to identify electrical hazards, estimate the probability and severity of injury or damage to heath, and

determine if protective measures are required to eliminate or reduce the hazards. Depending on the electrical system, the below listed risk assessments shall be completed.

1. Hazard-Based Risk Assessment

Hazard-based risk assessments are completed during the design and purchasing phase of a project. In this risk assessment, workplace hazards are identified and characterized by materials, processes, the worksite, and the environment. Activities that are affected by the hazards are identified, where the risk of the hazard is reduced by substituting or engineering controls. This risk assessment can be formal or informal.

2. Task-Based Risk Assessment

Task-based risk assessments are completed by analyzing all hazards (i.e., electrical, chemical, etc.) associated with the task or job, where each step is broken down with hazards and controls assigned to each step. The task-based risk assessment is also referred to as the job safety analysis (JSA). JSAs must be completed prior to each task or job.

3. Shock Risk Assessment

Shock risk assessments must be completed to identify shock hazards, estimate the likelihood of occurrence of injury or damage to health, estimate the potential severity of injury or damage to health, and determine required protective measures to be implemented.

Protective measures shall be selected and implemented according to the hierarchy of controls. When protective measures are not feasible, PPE will be implemented and the following determined:

- Voltage to which personnel will be exposed
- Boundary requirements
- Personal and other protective equipment required to protect against shock hazard

Limited approach and restricted approach boundaries will be established where personnel are required to approach exposed energized electrical conductors or circuit parts.

Shock hazard identification has been completed for Plant 1 and 2 switchgear and motor control centers (MCCs) by the OC San Electrical Engineering group (Division 760). The shock hazard identification includes calculations for the limited approach boundary and restricted approach boundary. These values have been posted in areas designated by the Electrical Supervisor, at locations adjacent to the switchgear or MCC assessed.

OC San or contractor qualified persons are required to complete the shock risk assessment, specifically to determine the likelihood of injury or damage to health and assignment of protective measures to further reduce the risk of injury. The qualified person must identify shock hazards for electrical equipment or systems not previously assessed by Division 760. Where a risk assessment has not been completed, qualified persons shall refer to Article 130 of NFPA 70E, specifically Tables 130.4(D)(a) and 130.4(D)(b).

4. Arc Flash and Arc Blast Risk Assessment

Arc flash risk assessments shall be completed in accordance with 8 CCR 3203 *Injury and Illness Prevention Program* to identify arc flash hazards, estimate the likelihood and severity for injury or damage, to determine if additional protective measure or PPE are required.

In accordance with 8 CCR 2320.11 *Protection from Flames and Electric Arcs*, for each employee exposed to hazards from electric arcs, the employer shall make a reasonable estimate of the incident heat energy to which the employee would be exposed. The probability and severity for injury or damage are calculated by assessing the design of the electrical equipment, including any overcurrent protective devices and operating time, as well as operating condition and condition of maintenance.

Protective measures shall be selected and implemented according to the hierarchy of controls. When protective measures are not feasible, PPE will be implemented and the following determined:

- Appropriate safety-related work practices.
- The arc flash boundary.
- PPE to be used within the arch flash protection boundary

The arc flash protection boundary is the distance at which the incident energy equals 1.2 calories per centimeter squared (cal/cm^2). The arc flash protection boundary will only exist when the electrical hazard is exposed. In some cases, the arc flash protection boundary may be at a greater distance than the limited approach boundary.

Arc flash hazard identification has been completed for Plant 1 and 2 switchgear and motor control centers (MCCs) by the OC San Electrical Engineering group (Division 760). The arc flash hazard identification includes calculations for the arc flash incident energy and arc flash protection boundary. These values have been posted in areas designated by the Electrical Supervisor, at locations adjacent to the switchgear or MCC assessed.

OC San or contractor qualified persons are required to complete the arc flash risk assessment, specifically to determine the likelihood of injury or damage to health and assignment of protective measures to further reduce the risk of injury. The qualified person must identify arc flash hazards for electrical equipment or systems not previously assessed by Division 760. Where a risk assessment has not been completed, qualified persons shall refer to Article 130 of NFPA 70E, specifically Tables 130.5(C), 130.7(C)(15)(a), and 130.7(C)(15)(b).

5. Battery Risk Assessment

Prior to any work on a battery system, a risk assessment must be performed to identify chemical, electrical shock, and arc flash hazards. The risk assessment shall include the risks associated with the type of tasks to be performed on the battery system. Qualified persons must complete this assessment.

D. Energized Electrical Work Permit

Qualified employees shall complete the energized work permit under the following conditions:

- Work (i.e., tightening connections, removing, or replacing) performed on exposed and energized conductors and circuit parts within the restricted approach boundary.

- When the employee interacts with the equipment, but the conductors and circuit parts are not exposed, but an increased likelihood of injury from an exposure to an arc flash hazard exists.

The energized work permit process is administered and maintained by the electrical maintenance division. OC San staff are not permitted to perform work on electrical systems when the calculated incident energy is greater than 40 cal/cm^2. OC San staff may operate equipment to establish an electrically safe working condition where the incident energy is greater than 40 cal/cm^2.

The work permit must be approved by the Electrical Supervisor, and include the following items:

- Description of the circuit and equipment to be worked on.
- Description of work to be performed.
- Justification for why the work must be performed energized.
- Description of safe work practices to be employed.
- Results of the shock/arc flash risk assessment.
- Means to restrict access of unqualified persons.
- Energized work approval.

The energized work permits are not required for the following tasks where a qualified person is provided with and uses appropriate safe work practices and PPE:

- Thermography, ultrasound, or visual inspections if the restricted approach boundary is not crossed.
- Testing, troubleshooting or voltage measuring.
- when accessing an area with energized electrical equipment if no electrical work is performed and employees do not cross the restricted approach boundary.
- general housekeeping and miscellaneous non-electrical tasks if the restricted approach boundary is not crossed.

E. Job Briefing

Any work involving exposure to live parts shall be preceded by a job briefing. The briefing shall include all affected persons performing and/or supporting the work. The briefing shall cover the following topics:

- Electrical and other hazards associated with the work task.
- Specific procedures that must be followed when executing the work task.
- Any special precautions that are required by the working conditions.
- Where and how to remove the source(s) of energy.
- Emergency response and emergency communications.
- Required PPE.
- Other work in the immediate physical area.
- Other work associated with the same electrical circuits or equipment.

The job briefing level of detail can be reduced for routine work where all the participants are aware of the hazards or if the task is relatively simple. If new staff or outside contractors are involved a complete briefing should be conducted.

VIII. Electrically Safe Work Conditions

Energized electrical conductors and circuit parts operating at voltages equal to or greater than 50 volts shall be put into an electrically safe work condition before an employee performs work within the limited approach boundary or the employee interacts with equipment where conductors or circuit parts are not exposed but an increased likelihood of being burnt from an exposure to an arc flash hazard exists.

Energized electrical work or exposure to open energized panels shall be prohibited without authorization and precautions in accordance with this program.

De-energizing electrical conductors and circuit parts to which an employee may be exposed will be performed by de-energizing and locking out the sources of electrical energy in accordance with the OC San Control of Hazardous Energy Program (SOP-605).

When the possibility of induced voltages or stored electrical energy exists, the phase conductors or circuit parts shall be grounded before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, temporary protective grounding equipment shall be installed and meet the following requirements:

- Be installed at such locations and arranged in such a manner as to prevent each employee from being exposed to a shock hazard. The location, sizing and application of temporary grounding equipment shall be identifying during job planning.
- Shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault.
- Shall have an impedance low enough to cause immediate operation of protective devices in case of unintentional energizing of the electric conductors or circuit parts.

Documentation, including facility drawings, shall be reviewed to ensure that no electrical circuit interlock operation can result in reenergizing the circuit being worked on.

Locks and tags shall only be installed on circuit disconnecting means. Control devices such as pushbuttons or selector switches shall not be used as the primary isolating device.

Arc flash personal protective equipment and special safety training may be waived if the following is achieved:

- An electrically safe working condition is achieved,
- No electrical energy is in the immediate vicinity of the work task, and
- All danger of injury from an electrical hazard has been removed.

Unqualified employees may perform work on equipment after an electrically safe work condition has been established, however, they must understand technical aspects of the work task to not create an electrical hazard when the equipment is re-energized.

IX. Energized Work

Working on energized equipment is permitted only if performed by qualified persons, where approved by the Electrical Supervisor, and where it can be demonstrated that de-energizing equipment introduces additional hazards or increased risk.

Energized work is permitted where the task is infeasible in a de-energized state due to equipment design or operational limitations, for equipment operating at less than 50 volts, or under normal operating conditions.

Employees working with exposed electrical hazards shall implement safety-related work practices consistent with the electrical hazard and associated risk. The safety-related work practices shall be determined before any person is exposed to the energized equipment using shock and arc flash risk assessments. The shock risk assessment will determine the limited approach boundary and the restricted approach boundary. The arc flash risk assessment will determine the arc flash boundary, including the level of personal protective equipment to protect against arc flash hazards. OC San will perform these risk assessments for all electrical systems.

Energized work is not permitted when the calculated incident energy exceeds 40 cal/cm^2.

A. General Requirements

Where lack of illumination or an obstruction prevents observation of the work to be performed, employees are prohibited from blindly reaching into areas that might contain exposed energized electrical conductors or circuit parts.

Conductive articles of jewelry and clothing (watches, bracelets, rings, key chains, necklaces, metal framed glasses) shall not be worn within restricted approach boundaries or where they present an electrical contact hazard. Additionally, any conductive materials and equipment that are in contact with any part of an employee's body shall be handled in a manner that will prevent contact with exposed energized conductors or circuit parts.

When working within a confined or enclosed space that contains exposed energized electrical conductors or circuit parts operating at 50 volts or more, protective shields, protective barriers or insulating materials shall be used to avoid inadvertent contact with these parts.

B. Normal Operating Conditions

Normal operating conditions exist when the following conditions are satisfied:

- The equipment is properly installed.
- The equipment is maintained.
- The equipment is used in accordance with the manufacturer’s instructions.
- The equipment doors are closed and secured.
- All equipment covers are in place and secured.
- There is no evidence of impending failure.

When equipment is in a normal operating condition, arc flash incidents are not likely to occur and therefore normal operation of the equipment is permitted. Designated clear spaces around equipment shall be maintained and not used for storage.

Employees performing housekeeping within the limited approach boundary shall not use electrically conductive cleaning materials (steel wool, liquid solutions, silicon carbide), except where adequate safeguards are in place.

C. 50 Volts or Less

Electrical conductors and circuits operating at 50 volts or less (nominal) may not present an electrical shock hazard under normal operating conditions. Since thermal hazards can exist in low voltage circuits, it shall be determined that there is no increased exposure to electrical burns or to explosion due to electric arcs. De-energization is not required where there is no potential for electrical burns and explosions.

Electrical systems operating at 50 volts or less may still present additional hazards that should be controlled. For example, an open circuit or short circuit could produce a toxic gas, ejection of materials, or damage to hearing and eyesight.

D. Limited Approach Boundary

The limited approach boundary is the established safe distance for unqualified persons. The limited approach boundary is a calculated distance from an exposed live part where a shock hazard may exist. Only qualified persons are permitted to cross this boundary, if needed.

Where there is a need for unqualified persons to cross the limited approach boundary, qualified persons shall advise the unqualified person of the hazards and continuously escort the unqualified person while inside the boundary limit. Unqualified persons shall never cross the restricted approach boundary.

E. Restricted Approach Boundary

The restricted approach boundary is closer to live parts and may only be crossed by qualified persons. The restricted approach boundary is a calculated distance from an exposed live part where there is an increased risk of shock due to electrical arc combined with inadvertent movement for personnel working near the live part. Energized electrical permits are required when crossing this boundary to perform work on the energized conductor or circuit.

No qualified person shall approach or take any conductive object closer to exposed energized electrical parts within the restricted approach boundary, except where one of the following conditions exists:

- The qualified person is insulated or guarded from energized conductors and circuits.
- The energized conductors or circuits are insulated from the qualified person and from any other conductive object at a different potential.

Unqualified persons are prohibited from working within the restricted approach boundary.

F. Arc Flash Boundary

The arc flash boundary is the calculated distance at which the incident energy equals 1.2 cal/cm^2 (energy capable of causing a curable second-degree burn). In theory, persons working outside of the arc flash boundary would only sustain a curable second degree burn or less should an arc flash occur. Work performed inside of the arc flash boundary requires a level of PPE to reduce the incident energy on the human body to quantities lower than 1.2 cal/cm^2.

The incident energy analysis is based on the working distance of the employee's face and chest from a prospective arc source for the specific tasks to be performed. The analysis is performed

as part of the arc flash risk assessment, which considers overcurrent protective devices, fault clearing time, and condition of maintenance.

The incident energy analysis shall be evaluated when changes occur in the electrical system or every five years, whichever occurs first.

The arc flash boundary does not apply when the electrical equipment or systems is in a normal operating condition. When energized electrical conductors and circuit parts are exposed, protective measure and PPE for arc flash protection shall apply. Where the arc flash boundary is greater than the limited approach boundary, barricaded shall not be placed any closer than the arc flash boundary.

X. Equipment Labels or Markings

Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, motor control centers, likely to require examination, adjustment, servicing, or maintenance while energized shall be marked with the following information, as determined by the incident energy analysis:

- Nominal system voltage,
- Limited approach boundary (in feet),
- Restricted approach boundary (in feet),
- Incident energy and corresponding working distance,
- Arc flash protection boundary (in feet).

Switchgear and MCC's will have the above information posted directly on the enclosure or available in an equivalent manner for reference. If information is not provided directly at the disconnect switch, staff must refer to the switchgear and/or MCC in which the device is fed.

Systems enclosures containing multiple energy sources are required to be appropriately labeled with a label warning of multiple energy sources and directing operation personnel to the procedure for eliminating all alternate sources of energy.

XI. Personal Protective Equipment (PPE)

Arc flash PPE shall be worn by qualified persons where exposed to energized conductors and circuit parts within the arc flash protection boundary. Qualified persons shall complete an arc flash risk assessment to determine appropriate protective measures and required level of PPE.

The required level of PPE can be determined using the incident energy analysis method or arc flash PPE category method.

A. Incident Energy Analysis Method

The incident energy analysis method is the OC San preferred selection method. This method is based on the working distance of the employee's face and chest from the prospective arc source for the specific task to be performed. This method recognizes that as the distance from the arc flash decreases, the required level of PPE increases. This method accounts for characteristics of overcurrent protective devices and its fault clearing time.

Incident energy analysis has been completed for most switchgears and MCCs located in the OC San process areas. Refer to Section X for additional details.

If an incident energy analysis has not been completed, the qualified person may perform one of the following:

- Calculate the incident energy using the incident energy analysis method.
- Use the incident energy calculated for the electrical source that feeds the specific equipment or system.
- Use the arc flash PPE category method.

When using the incident energy analysis method, the following table shall be used as part of the risk assessment to determine the required level of PPE based on incident energy calculated.

Calculated Arc Flash Incident Energy	Required PPE When Working in Restricted Approach and Arc Flash Protection Boundaries	Qualified Persons by Division	Minimum Qualified Persons Present	Work Activity Permitted
≤ 1.2 cal/cm^2	• Uniform • Hardhat • Safety glasses • Leather gloves • Leather work boots	• Electrical • Instrumentation • Operations • Mechanical • Collections	• One	• All Energized Work
> 1.2 to 8 cal/cm^2	Arc Suit Rated for 12 cal/cm^2 • Arc-rated flash suit • Arc-rated face shield and balaclava or arc-rated flash suit hood • Arc-rated outwear (as needed) • Arc-rated gloves or rubber insulating gloves with leather protectors, heavy-duty leather gloves accepted (0.7 mm thick) • Safety glasses or goggles • Leather work boots • Uniform • Ear plugs	• Electrical • Instrumentation • Operations • Mechanical • Collections	• One	• All Energized Work
> 8.1 to 40 cal/cm^2	Arc Suit Rated for 65 cal/cm^2 • Arc-rated flash suit • Arc-rated flash suit hood • Arc-rated outwear (as needed) • Arc-rated gloves or rubber insulating gloves with leather protectors • Safety glasses or goggles • Leather work boots • Uniform • Ear plugs	• Electrical • Instrumentation	• Two	• All Energized Work

Calculated Arc Flash Incident Energy	Required PPE When Working in Restricted Approach and Arc Flash Protection Boundaries	Qualified Persons by Division	Minimum Qualified Persons Present	Work Activity Permitted
>40.1	Arc-Rated rated for 65 cal/cm^2 • Arc-rated flash suit • Arc-rated flash suit hood • Arc-rated outwear (as needed) • Arc-rated gloves or rubber insulating gloves with leather protectors • Safety glasses or goggles • Leather work boots • Uniform • Ear plugs	• Electrical • Instrumentation	• Two	• De-Energization Only; Energized Work Prohibited

Note: Outwear includes a jacket, parka, rainwear, or hard hat liner that is arc-rated. Outerwear that is not arc-rated shall be removed prior to performing energized work. Arc suits must be rated for incident energy calculated at equipment.

B. Arc Flash PPE Category Method

Where the incident energy has not been calculated, the arc flash PPE category method listed in NFPA 70E, Article 130 may be used. Arc flash PPE is listed in Table 130.7(C)(15)(a) or Table 130.7(C)(15)(b), and Table 130.7(C)(15)(c) for the task and system type listed.

C. PPE Requirements

Personal protective equipment for electrical work shall be nonconductive wherever there is a danger from electric arcs or shocks due to contact with energized systems or from flying objects resulting in an electrical explosion. The protective equipment shall cover all parts of the body, including the head, face, neck, chin, eyes, body, and ears.

Employees shall wear arc-rated clothing wherever there is possible exposure to an electric arc flash above the threshold incident energy level of 1.2 cal/cm^2. Electrical and Instrumentation technicians are issued arc-rated uniforms with an arc flash rating of 8 cal/cm^2.

Arc rated clothing shall be worn as the outer most layer and cover ignitable clothing and allow for movement and visibility. Non-melting garments are permitted to be used in a layered system to achieve the required level of PPE. The overall rating of the layered system must be determined by the manufacturer. If non-melting fiber garments are used as underlayers, the system arc rating shall be sufficient to prevent break-open of the innermost arc-rated layer at the expected arc exposure incident energy level to prevent ignition of underlayers. The non-melting fiber garments will not add to the level of protection against arc injuries. Meltable fibers such as acetate, nylon, polyester, polypropylene, and spandex shall not be permitted in fabric underlayers next to the skin, unless the garment is flame resistant. An incidental amount of elastic used in non-melting fabric underwear or socks is permitted.

All jewelry and conductive articles worn, such as watch chains, belt buckles, rings, wristwatches, metal framed eyeglasses, or bands shall be removed prior to working on energized parts.

D. Body Protection

Shirt and coverall sleeves shall be fastened at the wrists. Shirts shall be tucked into pants, and shirts, coveralls, and jackets shall be closed at the neck.

Tight-fitting clothing shall be avoided. Loose-fitted clothing provides additional thermal insulation. The clothing shall fit properly as to not interfere with the work.

Clothing with drawstrings shall have drawstrings tied back or tucked away as to minimize potential of being snagged on equipment or moving parts.

E. Head and Eye Protection

Arc-rated hoods or balaclava with an arc-rated face shield shall be used when the back of the head is within the arc flash boundary. Arc-rated hoods are required when incident energy exceeds 8 cal/cm^2.

Face shields shall have an arc rating suitable for the arc flash exposure. Face shields without an arc rating shall not be used. Face shields may only be used for incident energies less than 8 cal/cm^2. Eye protection (safety glasses or goggles) shall always be worn under a hood or face shield.

Hard hat liners and hair nets are prohibited from use, except where they are designed for use at industrial electrical or utility applications.

F. Hand and Arm Protection

Employees shall wear rubber insulating gloves with leather protectors (gloves) for protection against shocks and arc flash for incident energies greater than 1.2 cal/cm^2. Rubber insulating sleeves shall be worn where there is potential for injury to the arm from contact with exposed energized conductors and parts.

Insulating rubber gloves are among the most important articles of personal protection for electrical workers. Rubber gloves must be used with leather gloves to keep the soft rubber glove from being damaged. Since the protector does not add any significant insulation value, the length of the protector must be less than the length of the rubber glove. The standard ASTM F496 requires Class 00 and 0 gloves to be ½ “longer than the protector and Class 2 gloves to be 2 inches longer. When it is required to reach into equipment beyond the length of the glove, insulating rubber sleeves must be used. Gloves are rated by voltage as shown below.

Voltage Class / Color	Maximum Use Voltage AC / DC
00 – Beige	500 / 750
0 – Red	1,000 / 1,500
1 – White	7,500 / 11,250
2 – Yellow	17,000 / 25,500
3 – Green	26,500 / 39,750

Voltage Class / Color	Maximum Use Voltage AC / DC
4 - Orange	36,000 / 54,000

Rubber insulating gloves are permitted to be used without leather protectors under the following conditions:

- The activity performed does not risk cutting or damaging the glove.
- The rubber insulating gloves are electrical retested before reuse.
- When rubber gloves are used without leather protectors, the voltage rating of the rubber insulating gloves, when reduced by 50 percent for Class 00 and by one whole class for Class 0 through 4, still achieve the required rating.

G. Foot Protection

Insulated footwear (heavy-duty leather or dielectric footwear) may be used to protect against step and touch potential where exposures are greater than 4 cal/cm^2.

H. Hearing Protection

Hearing protection is required when working within the arc flash boundary where electrical circuits and parts are exposed or where posted in compliance with the OC San Hearing Conservation Program (SOP-106).

I. Care and Maintenance

Protective equipment must be maintained in a safe, reliable condition and in accordance with the manufacturer's instructions. Protective equipment shall be stored in a manner to prevent damage from physically damaging conditions, moisture, dust, and other deteriorating agents (i.e., grease, oil, flammable liquids). Equipment that is contaminated or damaged to the extent that their protective qualities are impaired shall not be used.

Arc-rated clothing must be cleaned and maintained in accordance with the clothing manufacturer's instructions. Certain arc-rated materials cannot be washed with bleach or other cleaning additives.

J. Inspection and Testing

Arc-rated equipment shall be marked with the name of the manufacturer, product performance, arc rating, serial number or model number, and care instructions. Equipment shall conform to industry standards. Equipment with illegible markings shall not be used. Under rated equipment shall not be used.

A visual inspection shall be performed prior to each use. In addition, protective equipment shall be inspected immediately following any incident that could reasonably be suspected of having caused damage.

Rubber insulating equipment, which includes blankets, covers, gloves, line hose and sleeves, shall be electrically tested in accordance with applicable state and federal regulations. Test intervals shall not exceed the following:

Rubber Insulating Equipment	Test Interval
Blankets	Before first use; every 12 months thereafter
Covers	If insulating value is suspect
Gloves	Before first use; every 6 months thereafter
Line Hose	If insulating value is suspect
Sleeves	Before first use; every 12 months thereafter

Note: new insulating equipment is not permitted to be placed into service unless if it has been electrical tested within the previous 12 months.

Insulating gloves shall be given an air test prior to each reuse. Any leaks or damage to gloves shall be marked and the gloves shall not be used and removed from service.

Grounding equipment, such as grounding cable shall be inspected for cuts in the protective sheath and damage to the conductors prior to each use. Clamps and connector strain relief devices shall be checked for tightness.

XII. Other Protective Equipment

A. Insulated Tools and Equipment

Employees shall use insulated tools or handling equipment when working inside of a restricted approach boundary with exposed energized conductors or circuit parts. Insulated tools shall be protected from damage. Insulated tools shall be:

- Rated for the voltage on which they are used.
- Inspected prior to each use.
- Designed and constructed for the environment in which they are used.

Fuse and fuse holder handling equipment shall be insulated for the voltage.

Ropes and handlines used within the limited approach boundary shall be nonconductive.

Fiberglass-reinforced plastic rod and tube for live-line tools shall conform to applicable standards.

Portable ladders shall have nonconductive side rails when used within the limited approach boundary or where the employee or ladder could contact energized equipment.

Protective shields, barriers or insulating materials shall be used to protect employees while working in the limited approach boundary where unintentional contact or arcing could occur.

B. Live-Line Tools (Hot Stick)

Testing of live-line tool rods, tubes, and poles shall meet ASTM F711-89, Standard Specifications.

Each live-line tool shall be wiped clean and visually inspected for defects before use each day. If the live-line tool is found to have any defect or contamination, the tool shall be repaired before being returned to service or permanently remove. If the tool is not found to have any defect, it

should be cleaned and waxed. The live-line tool shall be removed from service every 2 years for examination, cleaning, and repair.

C. Signage and Barricades

Signs, symbols, or tags shall be used where necessary to warn employees about electrical hazards that could endanger them. Warning signs shall be visible, securely attached and maintained in legible condition.

Barricades or equivalent devices shall be used to prevent or limit employee access to work areas containing energized and exposed conductors or circuit parts. Where signs or barricades do not provide sufficient warning or protection, an attendant may be positioned outside of the work area to notify unqualified persons of the electrical hazards.

D. Remote Actuators

Remote actuators are an acceptable engineering control to reduce the probability of injury. Remote actuators are equipment that allows the worker to open and close a circuit breaker or switch from a safe distance, such as outside of the arc flash protection boundary. Qualified persons operating remote actuators will receive training on use, storage, and security.

E. Minimum Approach Distance

The employer shall ensure that no employee takes a conductive object closer to exposed energized parts than the established minimum approach distances unless:

Minimum Approach Distances		
Voltage (V)	Phase to Ground	Phase to Phase
0-300	Avoid contact	Avoid contact
301-600	1 foot 1 inch	1 foot 1 inch

Note: for voltages greater than 600 Volts, see Section 2940.2.
(1) The qualified employee is insulated or guarded from the energized part (rubber insulating gloves or gloves with sleeves rated for the voltage involved shall be considered insulation of the employee from the energized part upon which the qualified employee is working provided that the qualified employee has control of the part in a manner sufficient to prevent exposure to uninsulated portions of the employee's body), or
(2) The energized part is insulated or guarded from the employee and any other conductive object at a different potential.

XIII. Over Head Electrical Lines

Where work is performed in locations containing uninsulated energized overhead lines that are not guarded or isolated, precautions shall be taken to prevent employees from contact with their body, conductive materials, tools, or equipment. When work is performed and contact with such lines is possible, the lines shall be de-energized and visibly grounded at the point of work or suitably guarded.

The following general approach distances shall be maintained when working adjacent to or driving equipment under high-voltage power lines:

Power Line Voltage (kV)	Minimum Safe Distance (feet)	
	Operation Near High-Voltage Lines	In Transit Near High-Voltage Lines
<50	10	6
>50 – 200	15	10
>200 – 350	20	12
>350 – 500	25	16
>500 to 750	35	16
>750 to 1,000	45	20
ANSI B30.5-2004, 5-3.4.5.2		

For heavy equipment that is extendable or telescoping (e.g., excavator, dump truck), it should be evaluated if a spotter is necessary prior to operating the equipment near the overhead utility.

XIV. Battery Room and Enclosures

Battery risk assessments should be completed prior to any work on a battery enclosure or system. The assessment shall consider chemical, electrical shock and arc flash hazards, as well as types of tasks to be performed on the system.

Unauthorized persons shall be prohibited from entering battery rooms or enclosures with exposed and energized batteries. Authorized persons are individuals who have specific duties associated with such exposed and energized systems. Warning signs or labels must be posted with warnings for the electrical and chemical hazards, personal protective equipment, and prohibiting access to unauthorized personnel.

Conductive objects such as jewelry shall not be worn while working on a battery system.

Ventilation systems required by the battery system shall be examined and maintained to prevent buildup of explosive mixtures. Ventilation may be forced or natural.

Where employees are required to handle battery electrolytes, the following protective equipment shall be worn in addition to any arc flash equipment required to remove the battery from service: goggles and face shield, chemical resistant gloves, and chemical splash apron.

Insulated non-sparking tools and insulated equipment is required for working on batteries. Caution shall be used if wiping plexiglass enclosures with cloth and cleaner, which can leave the surface positively charged resulting in a fire or explosion hazard.

Spill control and acid neutralization kits shall be readily available.

XV. General Maintenance Requirements

All electrical equipment must be listed by a national testing laboratory for specific application for which it is used, as well maintained in accordance with manufacturers' instructions.

All electrical equipment that are likely to require examination, adjustment, servicing, or maintenance while energized, must be labeled to warn qualified persons and others of the potential electrical shock and arc flash hazards. The labels shall be legible and updated as needed.

A. Guarding of Live Parts

Live parts of the electric equipment operating at 50 volts or more shall be guarded against accidental contact by approved cabinets, enclosures or by the following:

- By location in a room, vault or similar enclosure that is accessible only to qualified persons.
- By suitable permanent, substantial partitions or screens so arranged that only qualified persons will have access to the space within reach of the energized parts.
- Cabinets, cutout boxes, fittings, boxes, and panel board enclosures in damp or wet locations shall be installed to prevent moisture or water from entering and accumulating within the enclosures and shall be mounted so there is at least 0.25 in. (6.35 mm) airspace between the enclosure and the wall or other supporting surface.
- By location on a suitable balcony, gallery, or platform so elevated and otherwise located to prevent access by unqualified persons.
- Elevations greater than 8 feet or more above a floor or working level.

Enclosures shall be maintained to guard against unintentional contact with exposed energized conductors and circuit parts and other electrical hazards. Covers and doors shall be in place with all associated fasteners and latches secured. Electrical panels shall be free from recognized hazards (e.g., flammable material, loose objects, etc.) to ensure the safety of employees.

Covers for wiring systems shall be in place with all associated hardware, and there shall be no unprotected openings. All pull boxes, junction boxes, and fittings shall be covered. If metal covers are used, they shall be grounded.

B. Clear Spaces

Access to working space and escape passages shall be kept clear and unobstructed. The working space may not be used for storage. The width of the working space should be the width of the electrical panel or 30 inches, whichever is greater. The minimum clear working space in front of electric equipment such as switchboards, control panels, switches, circuit breakers, and similar equipment must maintain the following distance with the following voltage:

Nominal Voltage to Ground	Minimum Clear Distance (Feet)		
	Condition 1	Condition 2	Condition 3
0 to 150	3	3	3
151 to 600	3	3.5	4
601 to 2,500	3	4	5
2,501 to 9,000	4	5	6
9,001 to 25,000	5	6	9
25,001 to 75 kV	6	8	10
Above 75 kV	8	10	12

Notes:
Condition 1: Exposed live parts on one side and no live or grounded parts on the other side of the working space or exposed live parts on both sides effectively guarded by suitable wood or other insulating material. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts.
Condition 2: Exposed live parts on one side and grounded parts on the other side. Concrete, brick, or tile surfaces shall be considered as grounded surfaces.
Condition 3: Exposed live parts on both sides of the workspace (not guarded as provided in Condition (1)] with the operator between.

XVI. Test Instruments and Equipment

Only qualified persons shall perform tasks such as testing, troubleshooting, and voltage measure on electrical equipment operating at voltages equal to or greater than 50 volts.

Instruments and equipment shall be rated, approved, and used in accordance with the manufacturer, as well as designed for the environment to which they will be exposed and for the manner in which they will be utilized.

Instruments shall be visually inspected for external defects and damage before each use.

When test instruments are used for testing the absence of voltage on conductors or circuits operated at 50 volts or more, the instrument shall be verified on any known voltage surface before and after an absence of voltage test is performed.

XVII. Portable Cord and Plug-Connected Equipment

A. Extension Cords

All extension cords shall be listed by the Underwriters' Laboratory (U.L.) and bear the U.L. label.

The size of the wire in the extension cord must be compatible with the amount of current the extension cord will be expected to carry. The amount of current will depend on the equipment plugged into the extension cord. Current ratings are typically printed on the nameplate or specification sheet for equipment. Since voltage drops over the length of the cord, the length will also determine the selection of wire size. Homemade extension cords assembled with a metal box shall not be made or be used.

Extension cords shall be used only in continuous lengths without splice or tap. The terminals and insulation shall be free of defects such as cracked, split, or nicked insulation; exposed wires; knots; burn marks; loose connectors; or other damage that may present a fire or an electrocution hazard. The ground prong shall not be removed. Destroy any extension cords showing defects.

Each extension cords shall be visually inspected before each day's use for external and internal defects. Use of electrical tape is not allowed for repairs.

Extension cords shall be handled and stored in a manner that will not cause damage. It is recommended that extension cords be coiled or hung when in storage. The cord shall not be used for raising or lowering equipment. The cord shall not be fastened with staples or hung in such a fashion as could damage the outer jacket or insulation.

Extension cords shall be used in conjunction with a tested GFCI to prevent unintentional electrical shocks.

B. Flexible Cords

Each flexible cord shall be equipped with an attachment plug and shall be energized from an approved receptacle outlet. In addition, flexible cords shall be used for:

- Pendants (a lamp holder or cord-connector body suspended by a length of cord properly secured and terminated directly above the suspended device).
- Wiring of fixtures.
- Connection of portable lamps or appliances.
- Elevator cables.
- Wiring of cranes or hoists (where flexibility is necessary).
- Connection of stationary equipment to facilitate their interchange, (equipment, which is not normally moved from place to place, but might be on occasion).
- Prevention of the transmission of noise or vibration.
- Temporary wiring as permitted.

Flexible cords shall not be used as a substitute for the fixed wiring of a structure, and shall not:

- Exceed 90 days of use in one application.
- Run through holes in walls, ceilings, floors, doorways, windows, or similar openings.
- Be attached to building surfaces.
- Be concealed behind building walls, ceilings, or floors.

C. Power Strips

Power strips are devices designed to provide multiple outlets from one-power source. Power strips must be Underwriters' Laboratory (U.L.) approved or approved by a similar nationally recognized testing laboratory and they must contain an integral circuit breaker.

Each power strip shall be plugged into a permanent wall receptacle. Power strips may not be plugged into another power strip or into an extension cord.

D. Portable Electric Tools and Equipment

Tools and equipment shall be inspected prior to use and maintained per manufacturer instructions. No damaged tool or equipment shall be used. Equipment shall be tagged out of service and not used until repairs are made.

XVIII. Ground-Fault Circuit-Interrupter Protection

Ground-fault circuit interrupters (either circuit breakers or portable ground-fault interrupting receptacles) are designed to protect personnel from serious injury, and shall be used for the following:

- All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less installed at the following locations:
    - Bathrooms

- Kitchens
- Rooftops (may be readily accessible other than from the rooftop)
- Outdoors
- Sinks, where receptacles are installed within 6 feet from the top inside edge of the sink bowl
- Indoor wet locations
- Locker rooms with showering facilities
- Garages, service bays, and similar areas
- Crawlspaces (at or below grade level)
- All breakroom dishwasher branch circuits
- When an employee is operating or using extension cords or cord and plug connected tools

GFCI's are not required for the following:

- Outdoor receptacles that are part of an assured equipment grounding conductor program for only those outlets used to supply equipment that would create a greater hazard if power were interrupted or having a design that is not compatible with GFCI protection.
- An appliance which is fastened or otherwise secured at a specific location (i.e., refrigerator, water cooler).
- Laboratory areas where receptacles are required (other than on counter tops) to supply power to specific equipment (i.e., receptacles dedicated to refrigerators or other heavy equipment).
- Line filters and other power supply components in many electronic instruments. These instruments draw sufficient capacitive current to trip a GFCI and therefore are not designed to be connected to GFCI-protected circuits.
- Any double insulated power tool or appliance.

GFCI receptacles installed at work locations listed above shall be tested in accordance with the manufacturer's instructions.

Portable GFCI protection devices installed where an employee is operating or using extension cords or cord and plug connected tools shall be tested before each use.

If any GFCI device fails inspection, tag and replace the GFCI protection device. Do not use the equipment until repaired or replaced.

XIX. Assured Equipment Grounding Conductor Program

Contractors shall establish and implement an assured equipment grounding conductor program that covers all cord sets and receptacles which are not a part of the permanent wiring of the building or structure and equipment connected by cord and plug, which are available for use or used by employees. This program shall comply with requirements established in Title 8, Section 2405.4 of the California Code of Regulations.

XX. Training Requirements

Training shall be provided to employees exposed to electrical hazards. Employees shall be trained to understand the specific hazards associated with electrical energy, safety-related work practices and procedural requirements to provide protection from the electrical hazards associated with their respective job.

A. Unqualified Persons

Unqualified persons who do not work within the limited approach boundary of energized electrical conductors or circuit parts but work in the vicinity must understand the hazards of electricity. Therefore, unqualified persons shall be trained in electrical safety related practices, as well as the control of hazardous energy. Depending on job classification, OC San staff will be assigned an online electrical safety overview and control of hazardous energy (LOTO) affected persons training provided through Cornerstone. Contractors should provide its unqualified persons who may be exposed to electrical hazards with a general awareness training.

B. Qualified Persons

Qualified persons shall be trained and knowledgeable in the construction and operation of equipment or a specific work method and be trained to identify and avoid the electrical hazards that might be present with respect to the that equipment. Qualified persons shall receive the following training:

1. Control of Hazardous Energy (LOTO) – Authorized Persons

This is the detailed class for persons authorized to control hazardous energy, develop energy control procedures, and implement such procedures.

2. NFPA 70E – Electrical Safety in the Workplace Hazard Training

This training provides requirements for safe work practices to protect personnel by reducing exposure to major electrical hazards, including safety related maintenance.

Retraining for safety-related work practices and applicable changes to the NFPA 70E standard shall be performed every 3 years. Training shall consist of classroom, on-the-job, or a combination of both.

Additional training is required if any of the following conditions exists:

- Supervision or annual inspections indicate the employee is not complying with safety-related work practices.
- New technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices different from those that the employee would normally use.
- The employee needs to review tasks that are performed less often than once per year.
- The employee needs to review safety-related work practices not normally used by the employee during regulator job duties.
- The employee's job duties change.

3. Emergency Response Training (Contact Release / First Aid)

Employees exposed to shock hazards and those employees responsible for acting in case of an emergency shall be trained in methods of release of victims from contact with exposed energized electrical conductors or circuit parts.

Employees responsible and designated to respond to medical emergencies shall be trained in first aid and emergency procedures.

4. Remote Actuator

Employees authorized to operate remote actuators will receive training from qualified vendor or electrical maintenance staff.

XXI. Auditing and Inspections

Annually the program shall be audited to ensure that the principles and procedures of the electrical safety program are being followed. Where the audit determines that the principles and procedures of the electrical safety program are not being followed, appropriate corrective actions/revisions shall be made. The program review shall be completed annually.

Field work audits shall also be performed to verify that the requirements contained in electrical procedures and electrical safety program are being followed. Audits shall be completed at least annually. Revisions shall be made to training, procedures, or the program to address audit findings.

Audits shall be maintained by the responsible Division for a period of three years.

XXII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XXIII. References

Injury and Illness Prevention Program

NFPA 70, National Electric Code (National Fire Protection Agency 2017)

NFPA 70E, Standard for Electrical Safety in the Workplace (National Fire Protection Agency 2018)

NFPA 2112, Standard on Flame-Resistant Clothing for Protection of Industrial Personnel Against Short-Duration Thermal Exposures from Fire (NFPA 2018)

SOP-102, Personal Protective Equipment

Subject: **Error! Reference source not found.**

SOP-605, Control of Hazardous Energy (LOTO)

SOP-608, Contractor Safety

Title 8, California Code of Regulations, Subchapter 5, Group 1. Low-Voltage Electrical Safety Orders, Section 2229 – 2599

Title 8, California Code of Regulations, Subchapter 5, Group 2. High-Voltage Electrical Safety Orders, Section 2700 - 2989

Title 29, Code of Federal Regulations, Standard 1910, Subpart S, Electrical

XXIV. Revision History

Version	Date	By	Reason
3.0	07/09/2009	Huynh, Cindy	Program Update
4.0	12/08/2015	Bauer, Wesley	Program Update
5.0	12/04/2018	Frattali, John	Program Update, including incorporation of SAFE Bulletin No. 77.
6.0	12/09/2019	Frattali, John	Annual program review: minor format change and remove language from Section VII for LOTO program changes
7.0	05/27/2020	Huynh, Brian	Periodic Update – Refer to Program Change Log
8.0	12/07/2021	Ventanilla, Sheri	Annual Program Review – Refer to Program Change Log

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-207 (Ver. 3) Hexavalent Chromium
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of this program is to protect the Orange County Sanitation District (OC San) staff and contractors from overexposure to hexavalent chromium [(Cr (VI)]. The goal is to help ensure that worker exposure levels to hexavalent chromium are accurately assessed and that workers are not exposed to hexavalent chromium at levels that are above occupational exposure limits. Measured concentrations of hexavalent chromium (below, at or above the exposure limit) will dictate compliance procedures to be implemented.

This written compliance program is implemented to reduce exposures at or below the occupational exposure limit, solely through means of engineering and work practice controls. This written program contains a description of each operation in which hexavalent chromium is emitted by District staff and the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to hexavalent chromium.

II. Background

Hexavalent chromium is a form of the metallic element chromium. Properties of chromium include corrosion resistance, durability, and hardness. Hexavalent chromium enters the body via inhalation, ingestion, and skin absorption. If not protected, exposure may cause lung cancer, irritation or damage to the nose, throat and lung, or irritation and damage to the eyes and skin.

District staff and contractors can be exposed to hexavalent chromium when welding, grinding, or cutting on stainless steel, galvanized steel, or chrome-coated metals. Hexavalent chromium occurs through the oxidation of chromium compounds with lower valence states. Chromium metal [Cr (0)] is present in electrodes, welding wires, stainless steel, and many low-alloy metals. The high temperatures created by welding, grinding, or cutting oxidize the chromium to the hexavalent state.

III. Definitions

Action Level – The action level for implementation of this program is the concentration of airborne hexavalent chromium of 2.5 micrograms per cubic meter of air (2.5 µg/m^3), calculated as an 8-hour time-weighted average (TWA).

Administrative Controls – Work procedures such as written safety policies, rules, supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to hazardous situations.

Air Changes Per Hour – An amount of air equal to the gross volume of air passing through a confined space in an hour.

Air Moving Devices – Term that includes exhaust, fan, or blower systems.

Chromium (VI) – Hexavalent chromium or Cr (VI) has a valence of positive six, in any form and in any compound. It is usually produced by an industrial process and is known to cause cancer. Chromium targets the respiratory systems, kidneys, liver, skin, and eyes. A major source of exposure is welding on stainless steel and other alloy steels containing chromium metal.

Emergency Release – Any activity that results or is likely to result in an uncontrolled release of hexavalent chromium. If an incidental release of hexavalent chromium (measured at or below the permissible exposure limit) can be controlled at the time of release by workers in the immediate release area, it is not an emergency.

Employee Exposure – The exposure to airborne chromium (VI) that would occur if the employee were not using a respirator.

Engineering Controls – Employ mechanical means or process redesign to eliminate, contain, divert, dilute, or collect hexavalent chromium emissions at the source. Examples of this type of control include process isolation or enclosure, employee isolation (excluding respirators) or enclosure, closed material handling systems, product substitution or process redesign to eliminate the contaminant, and local exhaust ventilation.

High-Efficiency Particulate (HEPA) Filter – A filter that is at least 99.97 percent (%) efficient in removing mono-dispersed particles of 0.3 micrometers (µm) in diameter or larger.

Historical Monitoring Data – Hexavalent chromium exposure assessment monitoring data obtained prior to September 19, 2006 (effective date of the hexavalent chromium standard). For the employer to rely on historical data, the data must have been obtained during work operations conducted under workplace conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

Job Safety Analysis (JSA) – A safety procedure which helps integrate accepted safety and health principles and practices into a task or job operation. In a JSA, each basis step of the job is to identify potential hazards and to recommend the safest way to do the job. A JSA should be completed for critical jobs, tasks, or activities.

Objective Data – Information such as air monitoring data from industry-wide surveys or calculations based on the composition or chemical and physical properties of a substance demonstrating the employee exposure to chromium (VI) associated with a product or material or a specific process, operation, or activity. The data must reflect workplace conditions closely resembling the process, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

Physician or Other Licensed Health Care Professional (PLHCP) – is an individual whose legally permitted scope of practice allows them to independently provide or be delegated the responsibility to provide some or all the health care services required by CALOSHA safety orders.

Permissible Exposure Limit (PEL) – No employee shall be exposed to airborne concentration of chromium (VI) more than 5 micrograms per cubic meter of air ($\mu g/m^3$), calculated as an 8-hour time-weighted average (TWA).

Personal Protective Equipment – All clothing and other devices worn by a worker to protect against workplace hazards.

Qualified Person – A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with problems relating to a subject matter, the work, or the project.

Regulated Area – An area, demarcated by the employer, where an employee's exposure to airborne concentrations of hexavalent chromium exceeds, or can reasonably be expected to exceed, the PEL.

Time Weighted Average (TWA) – an employee's average airborne exposure in any 8-hour work shift of a 40-hour work week which shall not be exceeded.

Ventilation – The changing of air within a compartment by natural or powered means.

IV. Responsibilities

A. Risk Management

Risk Management is responsible for administration of this program, including but not limited to:

- Monitoring overall effectiveness of the program.
- Providing training to affected District staff.
- Providing technical assistance to District staff and contractors.
- Providing industrial hygiene evaluations for District activities with the potential for hexavalent chromium exposure.
- Verifying required inspections, tests and recordkeeping functions have been performed.
- Reviewing and updating the program at least annually, or as needed.

B. Supervisors

Supervisors or designees are responsible for implementation of this program, including but not limited to:

- Ensure that each employee exposed to hexavalent chromium has appropriate general awareness training.
- Ensure that employees conduct work in compliance with this procedure.
- Evaluate work locations periodically for changes in hazards that may require modification to this procedure.
- Ensure that all equipment and PPE required by this procedure is available to employees always.

C. Employees

Employees, including contractor personnel, are responsible for the following:

- Shall complete hexavalent chromium awareness training as required by this program.

- Shall follow all safety rules, policies, procedures, and specific requirements regarding exposure to hexavalent chromium.
- Shall inspect protective equipment before use to ensure the equipment will provide the proper protection.
- Shall utilize protective equipment, include local exhaust ventilation systems where required by this program.
- Shall inform supervision of tasks that cannot be performed safely.
- Shall request additional safety equipment and/or other equipment from supervision as needed to ensure ongoing compliance with this procedure.
- Shall wear required PPE in accordance with the PPE hazard assessment and/or JSA.
- Maintain, inspect, and store equipment and PPE as specified by the manufacturer.
- Shall immediately report incidents, near misses, or hazards that may result in exposure to hexavalent chromium.

V. Exposure Determination

No employee shall be exposed to an airborne concentration of hexavalent chromium more than the permissible exposure limit (PEL), which is 5 micrograms per cubic meter of air (5 $\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA). As such, requirements of this program will be implemented when an action level of 2.5 micrograms per cubic meter of air (2.5 $\mu g/m^3$), calculated as an 8-hour time-weighted average (TWA), is exceeded.

OC San will conduct exposure assessments for District staff with possible exposure to hexavalent chromium. The assessments will be performed to identify and prevent overexposures, collect exposure data for selection of control methods, and evaluation for the overall effectiveness of those methods. Contractors are responsible for the assessment of their employees.

The exposure determinations can be completed either through scheduled monitoring or performance-oriented monitoring, which are described below.

A. Scheduled Monitoring

Scheduled monitoring is performed by collecting personal breathing zone air samples from a representative number of personnel in each job classification of each work area where exposure to hexavalent chromium may exist. The sampling shall be representative of a full shift to determine the 8-hour time-weighted average (TWA). Results of initial monitoring will determine frequency of periodic monitoring.

1. Initial Determination

Workplaces or work operations with the potential for exposure to hexavalent chromium will be monitored to determine if exposure to hexavalent chromium is at or above the action level. This determination will be made as by a qualified industrial hygienist as part of the respiratory hazard assessment. If initial monitoring results are below the action level, no further monitoring is required unless changes in workplace result in new or additional exposures. Engineering controls and work practices resulting in results below the action level shall continue. If initial monitoring results are at or above the action level, periodic monitoring shall be performed, including but not limited to, a review of engineering controls and work practices.

2. Periodic Monitoring

Periodic monitoring will be performed at the following frequencies if initial results are at or above the action level:

- If initial monitoring results are above or at action level, monitoring shall be performed every 6 months thereafter.
- If monitoring results are above the PEL, monitoring shall be performed every 3 months.
- If the periodic monitoring reveals that employee exposures have been reduced below the action level because of applied engineering controls or work practices, and confirmed by monitoring conducted at least 1 week apart, monitoring may be discontinued.

Additional sampling shall be performed when workplace changes, which can include alteration in process, raw materials, equipment, personnel, work practices, control methods used, or when the employer has any reason to believe that new or additional exposures have occurred.

All exposure monitoring results collected for District staff will be retained by Risk Management.

B. Performance Oriented Monitoring

Performance oriented monitoring utilizes a combination of air monitoring data (i.e., data obtained from initial and periodic monitoring, historical monitoring data, or object data sufficient to accurately characterize employee exposure to hexavalent chromium) to determine employee exposures.

When using this method, the exposure determination must be performed prior to the start of the work operation. Employers are required to reevaluate employee exposures when there is a change in the process, materials, equipment, personnel, work practices or control methods. The determination for performance-oriented monitoring must be documented in writing.

C. Accuracy of Measurement

Sampling methods employed for scheduled and performance-oriented monitoring shall measure hexavalent chromium with an accuracy of plus or minus 25 percent and produce accurate measurements within a statistical confidence level of 95 percent for air concentrations at or above the action level. The sampling methods must also be approved by the Occupational Safety and Health Administration (OSHA), OSHA ID-215 and the National Institute for Occupational Safety and Health (NIOSH), NIOSH 7600.

Affected employees or designated representatives reserve the right to observe any monitoring performed. Work area shall be delineated and use of personal protective equipment will be required when entering work area.

D. Extended Work Shifts

Adjustment of the PEL for extended work shifts may be required. To minimize errors and assumptions associated with fluctuations in exposure, representative full-shift sampling shall be performed. Monitoring results for employees working more than 8 hours in each workday will be time-weighted accordingly. The 8-hour time-weighted average (TWA) will be calculated using the following formula:

$$\textbf{8-hour TWA} = [(C_1)(T_1) + (C_2)(T_2) + \ldots + (C_n)(T_n)] / 8$$

where T is the duration in hours of the exposure at concentration C; 8 is used as the denominator regardless of total hours worked.

VI. Employee Notification

Employees shall be notified within 5 working days after the receipt of monitoring results. The notification shall be made in writing by posting results in a location accessible to all affected employees or notified individually.

Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL, the written notification shall include a description of the corrective action taken being taken to reduce employee exposure to or below the PEL.

VII. Methods of Compliance

A. Engineering Controls and Work Practice Controls

Engineering and work practice controls shall be used to reduce and maintain employee exposure to hexavalent chromium below the PEL, except where it can be demonstrated that such controls are not feasible. When feasible engineering controls are not sufficient to reduce employee exposure to or below the PEL, respiratory protection shall supplement the engineering controls used. Job rotation is not permitted to maintain compliance with the PEL. Engineering controls may include:

1. Substitution – Using a less toxic material or substituting a process that results in lower exposures for another type of process that results in higher exposures.

2. Isolation – Enclosing the source of exposure or placing a barrier between employees and the source of exposure.

3. Ventilation – Local exhaust systems that capture airborne hexavalent chromium near its source and removing it from the workplace, or general ventilation that dilutes hexavalent chromium concentrations by circulating large quantities of air. The exhaust system shall be designed and operated to prevent harmful exposure by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, mists, vapors, or gases. The local exhaust ventilation shall provide a minimum air velocity of 100 lineal feet per minute in the welding zone. Ventilation systems shall be frequently inspected and maintained per manufacturer recommendations. Flow rate will be verified on an annual basis completed by compliance group.

Work practice controls involve adjustments in the way a task is performed. In most cases, work practice controls will compliment an engineering control. Work practice controls will include periodic inspections and maintenance, work scheduling and duration of tasks.

B. Respiratory Protection

Respiratory protection shall be used when engineering and work practice controls cannot reduce employee exposures to within the PEL. Respirators shall be tight-fitting, air-purifying type. Respirators are required during:

- Periods necessary to install or implement feasible engineering and work practice controls.
- Work operations, such as maintenance and repair activities for which engineering, and work practice controls are not feasible.

- Work operations for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures below the PEL.
- Work operations where employers are exposed above the PEL for less than 30 days per year and the employer has elected to not implement engineering or work practice controls to reduce exposures below the PEL.
- Emergencies (i.e., uncontrolled release) that result in significant and unexpected exposures.

Respiratory protection must be used in accordance with the OC San Respiratory Protection Standard (SOP-109). For additional information, please refer to SOP-109.

C. Protective Work Clothing and Equipment

Employees shall wear protective clothing and equipment to protect against skin and eye contact from hexavalent chromium. Protective clothing and equipment may include, but is not limited to, gloves, aprons, uniforms or coveralls, foot coverings and goggles.

Contaminated clothing shall be removed at the end of the work shift or completion of tasks involving hexavalent chromium exposure, whichever comes first. No employee shall remove contaminated clothing or equipment from the workplace, except for laundering, cleaning or disposal of such clothing and equipment.

Contaminated protective clothing, which is to be disposed of, will be placed in a labeled and closed container in the area immediately adjacent to the hexavalent chromium task area, which prevents dispersion of hexavalent chromium outside the container.

Removal of hexavalent chromium from protective clothing or equipment by blowing, shaking, or any other means, which disperses hexavalent chromium into the air is strictly prohibited.

D. Housekeeping

Surfaces within the regulated area shall be maintained as free as practicable of accumulations of hexavalent chromium. Surfaces shall be HEPA vacuumed and/or wet wiped on a periodic basis. Floors and other surfaces shall not be cleaned using compressed air.

Shoveling, dry or wet sweeping, and brushing may be used only where HEPA vacuuming or other equally effective methods have been tried and found not to be effective.

Where HEPA vacuuming methods are selected, the vacuums shall be used and emptied in a manner which minimizes the reentry of hexavalent chromium into the workplace.

E. Hygiene Areas and Practices

Changing areas, washing facilities and break areas shall be provided to personnel exposed to hexavalent chromium at or above the action level.

Change rooms shall be provided where employees must change out of their street clothes to use protective clothing and equipment required by this program. The change room shall be equipped with separate storage facilities (i.e., lockers) for protective clothing and equipment and for street clothes, and these facilities shall prevent cross-contamination. Change rooms not only provide privacy to employees while changing their clothes but also avoids potential

contamination of an employee's car or home. Change rooms are only required where removal of street clothes is necessary.

Readily accessible washing facilities capable of removing hexavalent chromium from the skin shall be provided where skin contact occurs. The washing facilities must conform to OSHA's sanitation regulations (Title 8 CCR 3364). Personnel shall wash their hands and face at the end of the work shift and prior to eating, drinking, smoking, chewing tobacco or gum, applying cosmetics, or using the toilet. Shower facilities are located at both Plant 1 and Plant 2 Maintenance Buildings.

Eating, drinking, and smoking is only permitted in designated and approved areas that are free as practical from hexavalent chromium. Employees shall not enter break areas with protective work clothing or equipment unless decontaminated using methods that do not disperse hexavalent chromium into the air.

F. Regulated Areas

Regulated areas shall be established wherever exposure to airborne concentrations of hexavalent chromium is or can reasonably be expected to exceed the PEL.

Regulated areas shall be demarcated from the rest of the workplace in a manner that adequately establishes and alerts employees of the boundaries of the regulated area. Demarcation must include warning signs and barricades, caution tape, textured flooring, or any equally effective method. Warning signs shall include the following information:

DANGER
HEXAVALENT CHROMIUM
CARCINOGEN
CAN CAUSER LUNG AND KIDNEY DISEASE
AUTHORIZED PERSONNEL ONLY

Only authorized persons are permitted to be within the regulated area. Regulated areas must only be established for the duration of the task or activity in which exposure to hexavalent chromium exists.

Persons authorized to work within the regulated area shall be trained to administer engineering controls and wear required personal protective equipment. No employee is permitted to eat, drink, smoke, chew tobacco or gum, or apply cosmetics in a regulated area. Products that can be eaten, smoked etc. shall not be stored in the regulated area.

VIII. Medical Surveillance

Employees who are or may be occupationally exposed at or above the action level for 30 or more days per year, experience signs or symptoms of adverse health effects or exposed in an emergency to hexavalent chromium shall be included in a medical surveillance program. Medical surveillance shall be provided at no cost to the employee.

Medical examinations and procedures shall be performed by or under the supervision of a physician or other licensed health care professional (PLHCP). Medical evaluations shall be provided:

- Within 30 days after initial assignment unless chromium related medical examination has already been provided to the employee within the last 12 months.
- Annually.

- Whenever the employee shows signs or symptoms of the adverse health effects associated with hexavalent chromium exposure.
- At termination of employment unless the last examination was performed within 6 months prior to the date of termination.

Medical examinations shall include medical and work history, physical examination of skin and respiratory tract, and any additional tests deemed appropriate by the examining PLHCP.

The employer shall provide to the PLHCP a description of the affected employees former, current, and anticipated job duties and levels of exposure, personal protective equipment, and records of employee-related medical examinations as it relates to hexavalent chromium. The employer shall provide a copy of the written medical opinion to the examined employee within two weeks after receiving it.

IX. Training

Employees engaged in welding activities or those that work in a regulated area where hexavalent chromium is generated, shall be appropriately trained. Training will be provided annually for employees exposed to hexavalent chromium. Training shall be documented and include the following at a minimum:

- The health hazards associated with hexavalent chromium exposure.
- The quantity, location, manner of use, release, and storage of hexavalent chromium in the workplace and the specific nature of operations that could result in the exposure of hexavalent chromium, especially exposure above the PEL.
- The engineering controls and work practices associated with the employee's job assignment.
- The measures employees can take to protect themselves from exposure to hexavalent chromium, including modification of such habits as smoking and personal hygiene, the specific procedures the employer has implemented to protect employees from exposure to hexavalent chromium such as appropriate work practices, emergency procedures, and the provision of person protective equipment.
- The purpose, proper selection, fitting, proper use and limitations of respirators and protective clothing.
- The purpose and a description of the medical surveillance program required by the standard.
- The employee's right of access to records.
- Access to information and training materials.

X. Mandatory Requirements for District Staff

Risk Management has conducted various exposure assessments for hexavalent chromium over the last several years. The air monitoring results indicate, without regards to respiratory protection, results greater than the permissible exposure limit. Therefore, District staff engaged in welding, grinding, or cutting on stainless steel, galvanized steel or chrome plated materials must adhere to the following requirements:

- Employee shall receive training for exposure to hexavalent training.
- Employee shall receive medical clearance and be fit tested for the appropriate respirator used to protect against exposure to hexavalent chromium.
- Employee shall delineate work area at least 15 feet in all directions to keep other employees away.

- Employee shall wear PPE in accordance with the PPE hazard assessment and job safety analysis (JSA), which includes respiratory protection and OC San issued uniforms.
- Employee shall use local exhaust ventilations when working indoors, confined spaces or outdoor locations with poor natural ventilation. The ventilation units shall be maintained and operated per manufacturer instructions.
- Employee shall perform housekeeping in accordance with this program.

XI. Recordkeeping

A. Exposure Monitoring Data

Records of air monitoring data will be retained by the Risk Management Division. Results of the air monitoring will be incorporated into the Industrial Hygiene database. Air monitoring records will include the following information at a minimum:

- The date of measurement for each sample.
- The operation being monitored.
- Sampling and analytical methods used.
- Number, duration, and results of samples collected.
- Type of personal protective equipment, such as respirators worn.
- Name, employee number and job classification for employees monitored.

Employee exposure records shall be preserved and maintained for at least 30 years, except for background data, such as laboratory reports and worksheets, only need to be retained for 1 year if the sample results, sampling plan, description of analytical methods, and summary of the other background data relevant to interpretation of the results are retained for 30 years.

B. Historical Monitoring Data

Employers relying on historical monitoring data to determine exposure to hexavalent chromium shall establish and maintained accurate records for data relied upon. The record shall include the following information:

- Data collecting using methods that meet accuracy requirements.
- Processes and work practices that were used when historical monitoring data was obtained.
- Characteristics of the material containing hexavalent chromium being handled when historical monitoring data was obtained, and verification the material is the same.
- Environmental conditions prevailing when the historical monitoring data was obtained and that the conditions are the same as those for which the exposure is being determined.
- Other relevant data to the operations, materials, processing, or employee exposures covered by the exception.

C. Objective Monitoring Data

Employers relying on objective monitoring data shall maintain an accurate record of all objective data relied upon, including the following:

- Chromium containing material in question.
- Source of objective data.
- Testing protocol and results of testing, or analysis of material for release of hexavalent chromium.

- A description of the process, operation, or activity and how the data supports the determination.
- Other relevant data to the process, operation, activity, material, or employee exposures.

D. Medical Surveillance Program Removal

Risk Management will establish and maintain an accurate record for each employee removed from the medical surveillance program regarding exposure to hexavalent chromium. The record shall include:

- The name, employee number, social security number and job classification of the employee.
- The date on each occasion that the employee was removed from current exposure to hexavalent chromium, as well as the corresponding date on which the employee was returned to his or her former job status.
- A brief explanation of how the removal was or is being accomplished; and
- A statement indicating the reason for the removal.

Medical records shall be maintained for the duration of the employee's employment plus 30 years.

E. Availability

Environmental monitoring, medical removal, and medical records required by this paragraph shall be provided upon request to employees, designated representatives, and regulatory officials. Medical removal records shall be provided in the same manner as environmental monitoring records.

XII. References

Injury and Illness Prevention Program

SOP-102, Personal Protective Equipment

SOP-109, Respiratory Protection Program

SOP-118, Hot Work Program

Title 8, California Code of Regulations, Article 4, Dusts, Fumes, Mists, Vapors, and Gases, Section 1532.2, Chromium (VI)

Title 8, California Code of Regulations, Article 107, Dusts, Fumes, Mists, Vapors and Gases, Section 5141, Control of Harmful Exposure to Employees

Title 8, California Code of Regulations, Article 107, Dusts, Fumes, Mists, Vapors and Gases, Section 5143, General Requirements for Mechanical Ventilation Systems

Title 8, California Code of Regulations, Article 107, Dusts, Fumes, Mists, Vapors and Gases, Section 5144, Respiratory Protective Equipment

Title 8, California Code of Regulations, Article 107, Dusts, Fumes, Mists, Vapors and Gases, Section 5150, Ventilation and Personal Protective Equipment Requirements for Welding, Brazing and Cutting

Title 8, California Code of Regulations, Article 107, Dusts, Fumes, Mists, Vapors and Gases, Section 5152, Ventilation and Personal Protective Equipment Requirements for Grinding, Polishing, and Buffing Operations

Title 8, California Code of Regulations, Article 107, Dusts, Fumes, Mists, Vapors and Gases, Section 5155, Airborne Contaminants

Title 8, California Code of Regulations, Article 110, Regulated Carcinogens, Section 5206, Chromium (VI)

Title 29, CFR, Subpart Z, Standard 1910.1026, Chromium (VI)

XIII. Revision History

Version	Date	By	Reason
1.0	07/08/2010	Huynh, Cindy	New
2.0	11/02/2020	Frattali, John	Periodic Update – Refer to Program Change Log
3.0	12/07/2021	Lam, Brian	Annual Program Update – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-208 (Ver. 3) Workplace Security
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The purpose of the Workplace Security Policy is to establish, implement, and enforce comprehensive security polices which support a secure working environment for all OC San employees and contractors through proactive security measures, communication, and teamwork.

Risk Management is dedicated to protecting all employees, contractors, and critical infrastructure against acts of violence which would cause injury or harm and disrupt OC San's ability to provide effective wastewater collection and treatment and protect the public health.

II. Definitions

Access: The ability and opportunity to gain entry to a protected area.

Access Control: The control of persons, vehicles, and materials through entrances and exits of a protected area; an aspect of security that often utilizes hardware systems and specialized procedures to control and monitor movements into, out of, or within a protected area. Access to various areas may be limited to place or time, or a combination of both. Some access control systems feature historical data bases for reference.

Access Control Card Reader: Access control card readers are used in physical security systems to read a credential that allows access through access control points such as a locked door or a gate.

Badge: A device or token indicating membership in a group such as an employee identification card, access control card, or the shield worn by public safety personnel or security officers.

Card Key: A plastic card that contains coded information capable of being read by access control card readers placed at the entry and exit points of the protected facility.

Closed Circuit Television (CCTV): A television installation in which the signal is transmitted to a defined number of receivers.

Contract Security: Protective services provided by one company, specializing in such services, to another company on a paid, contractual basis.

Civil Demonstration: A civil protest/disturbance that takes form an organized public demonstration of disapproval with particular action, idea, or incident.

Integrated Emergency Response Plan (IERP): A collection of Emergency Operational Plans (EOPs) within OC San.

Lighting: In the context of physical security, lighting which aids in the protection of assets, particularly as it relates to the prevention and early detection of unwanted intrusion. In an industrial facility, security lighting is required for protection of property, to discourage trespassers, and to provide a means for security to identify personnel.

Physical Security: Infrastructure designed prevent harm, damage, or unauthorized access to employees, contractors, and critical infrastructure.

Protected Area: An area protected by physical security safeguards and access controls.

Protected Process Area (PPA): An area within the perimeter of the plant(s) and pump stations that require additional physical protection because of their critical nature to plant operations. Access to PPA by contractors, consultants, vendors, and suppliers require OC San responsible parties' approval and supervision prior to and when entering.

Security Committee: The Security Committee is comprised of fourteen (14) members who serve in a leadership and/or supervisory role throughout OC San. The purpose of the Committee is to provide a formal means for employees to effectively participate with management in the identification and resolution of security concerns, and to promote the safety and security of OC San. Risk Management staff and the Committee will work in conjunction to safeguard physical and cyber resources, identify conditions or circumstances that may pose risks to the safety and security of the facilities, and prepare OC San to effectively respond to emergencies.

Security Plan: Plan used to assist OC San in improving the safety and security of its facilities, employees, and the public. The Plan offers an effective security approach for water support facilities includes equipment and systems to deter, detect, delay, and respond to a threat prior to the disruptive risk achieving its objective.

Security Threat: Anything that has the potential to cause serious harm to people or infrastructure and will disrupt OC San's ability to provide effective wastewater treatment.

Vital Operation Area (VOA): Located within the protected process area and requires additional security measures. Additional authorization is required for unescorted access to vital operation areas.

Vulnerability: A vulnerability is a weakness or lapse in infrastructure which can be exploited by a hostile actor who wishes to inflict harm to people or property.

Workplace: Any location, either permanent or temporary, where an employee performs any work-related duty. This includes, but is not limited to, administrative buildings, surrounding perimeters, parking lots, off site locations, and the travel between work locations.

Workplace Security: Workplace security includes threats, violent behavior, harassment, intimidation, and other disruptive behavior, direct, indirect, implied, or actual from any person, and directed toward any person, occurring either at an OC San facility or in connection with the conduct of OC San business without regard to location.

III. **Responsibilities**

A. Risk Management:

1. Write and implement security policy for OC San employees. Risk Management will serve as a conduit and provide information on physical security, risk mitigation, infrastructure resiliency, and emergency response issue.

2. Investigate and report security incidents and follow-up as necessary to improve security performance. Risk Management will share lessons learned from such incidents using after-action reports (AAR), correspondence, and other tools to take corrective action(s), prevent future occurrences, and impalement best practices.

3. Administer outside security services such as professional consulting services, guard services, and investigative services as they relate to security

4. Conduct security and emergency preparedness exercises.

5. Administer and control the identification card and access control program.

6. Provide guidance in the implementation of physical controls and barriers of OC San facilities.

7. Provide liaison with local, state, and federal law enforcement and emergency management agencies if applicable.

8. Administer employee, contractor, and visitor access to OC San facilities.

9. Administer vehicular access and parking control at all OC San facilities.

10. Maintain and update the Security and Emergency Management SharePoint page.

B. Security Committee

1. Responsible for supporting and fostering a safe and secure environment in all facilities owned and/or operated by OC San. Promotes an appropriate level of security on OC San facilities and safeguards OC San property and physical assets.

2. Provides observations, input, and recommendations on strategic security and emergency response issues.

3. Review findings and corrective actions of reported security incidents.

4. Provide Committee updates to their department employees.

5. Review and recommend current and future security procedures and projects.

6. Ensure that security measures will be considered at the earliest stage of new projects, such as the expansion of plant critical infrastructure.

C. Management and Supervision

1. Individuals in supervisory and management roles are responsible for ensuring that employees under their supervision are aware of security policies and procedures for the reporting of security problems, accidents, emergencies, crimes, and threats. They are also responsible for ensuring that emergency preparedness and continuity of operations plans are followed and communicated to all employees to ensure familiarity with, and coordination between departments and emergency responders. Evaluate the performance of all employees in complying with OC San workplace security measures.

2. Follow progressive discipline for employees who fail to comply with workplace security practices.

3. Recognize employees who perform work practices which promote security in the workplace.

4. Managers and Supervisors ensure that appropriate physical-security measures are taken to mitigate the loss of equipment and supplies. Physical protective measures include barriers, lighting, and electronic security systems, and access control. Supervisors shall always enforce all access control policies ensuring doors are secure. Doors propped open for the purpose of routine work or delivers should be monitored while work is in progress.

5. The preservation of OC San assets is the responsibility of every employee. This responsibility includes taking appropriate measures to prevent losses due to willful actions which would result in personal injury, property damage (i.e., vandalism) or theft. First line supervisors and managers have the additional responsibility of facilitating the gathering of reports of losses, which will be forwarded to Risk Management for tabulation or additional investigation.

6. Managers and Supervisors have the responsibility of promoting a secure working environment. Managers and Supervisors have increased responsibility of ensuring that employees are adhering to all security policies and procedures outlined in this SOP.

D. Employees

1. All employees are responsible for the safety and the security of our workplace. Employees must follow all security and traffic signs, abide by and aid in the enforcement of all security policies and procedures, and assist in maintaining a safe and secure working environment.

2. Security and safety rules apply to all OC San employees, visitors, and contractors. Violators of these rules can be subject to disciplinary action up to and including termination. For contracted consultants who violate OC San security policy they can be subject to contract termination or removal from the site.

3. Abide by all posted security and traffic control signs and security personnel.

4. OC San assets are to be protected and to be used for authorized purposes only.

5. Employees must comply with Workplace Security Policy which safeguards OC San assets against theft, damage, and unauthorized use.

6. All employees must work with Risk Management to ensure best physical security practices are being enforced.

7. All employees are responsible for submitting visitor information into the Visitor Registration system located at https://visitors/.

8. All employees have the responsibility for reporting all known or suspected asset losses that come to their attention to their immediate supervisor. First line supervisors and managers are responsible for ensuring that OC San Security/Loss Reports are completed for asset loss with their area of responsibility. This reporting must be completed in five (5) business days and be accurate. Security/Loss Reports provide the basis for an accurate tracking of security risk exposures. The tracking will serve to facilitate analysis, identify weaknesses in current business processes, and provide for corrective actions to minimize future losses.

9. If you discovered a crime has been committed or witness a crime in progress, please report it to your immediate supervisor, Risk Management, and the local police department. If the crime is in progress dial 2222 or 911 if located off site. Additionally, you should notify the Control or Operations Center of the crime. If safe, remain on site or at the location to assist management and Risk Management personnel in the reporting of the crime. In cases where an employee is the victim of a crime, such as vandalism or theft, the employee should be available to report incident to police and/or security.

10. Employees shall complete a security loss/incident report form and property disposition form which is available on the San Box (intranet site). First line supervisors and managers are responsible for ensuring a copy of the completed incident report is provided to Risk Management.

IV. Physical Security Plan

A. The Physical Security Plan outlines and offers consistent direction for the security standards of both new construction builds and existing building retrofits. Data was primarily utilized from the American Society of Civil Engineers (ASCE), “Guidelines for the Physical Security of Wastewater/Stormwater Utilities” publication. This Plan includes the following:

   1. Conduct a site risk assessment during the early phases of the site design, by utilizing a customized OC San Risk Assessment scorecard.

   2. Determine the risk-level of a specific OC San site (low-risk, medium-risk, high-risk).

   3. Recommend physical security components for various types of risk-level sites (CCTV coverage, physical barriers, lighting standards, alarm systems, etc.)

   4. Provide detailed and consistent descriptions and features of the various physical security components for operators, engineers, and OC San executives

B. The Physical Security Plan is located on the Risk Management SharePoint under the Security page. The plan shall be utilized to guide Risk Management and all other stakeholders in the implementation of physical security infrastructure.

V. Vulnerability and Risk Assessments

A. Risk Management is responsible for conducting vulnerability and risk assessments for OC San owned critical infrastructure at Plant 1, Plant 2, and all offsite facilities in accordance with the Physical Security Plan. Assessments consist of the identification of workplace security threats and hazards and potential solutions or mitigation measures. OC San utilizes mitigation strategies and best practices to mitigate risk and reduce threats.

B. Assess the need for video surveillance systems, security lighting, hardening infrastructure, and access control mechanisms.

C. Assess procedures for reporting suspicious persons or activities.

D. Assess entry control points (ECP) and visitor access policies and procedures.

VI. Security Incidents in the Workplace

A. OC San promotes a safe work environment for all employees and contractors. The safe work environment includes an environment that is free from violence, threats of violence, harassment, intimidation, and other disruptive behavior.

B. All workplace violence issues, incidents, and procedures will be reported in accordance with Human Resources (HR) Policy 1.3 Effective Date September 26, 2018. All employees are responsible for maintaining a safe work environment.

VII. Security Incidents and Investigations

A. Investigations into a security matter may or may not require the involvement of law enforcement. OC San Risk Management in conjunction with Human Resources and applicable OC San Manager(s) or Supervisor(s), and the contracted security service may investigate a security matter when any of the following conditions exists:

1. Administrative inquiries into a matter which violates OC San's security policies and guidelines or local, state, and federal statutes.

2. Proactive or reactive investigations initiated either primarily for preventive purposes or in response to an act or specific report.

3. Investigations into a procedure or occurrence which require improvements in security protocols and/or standard operating procedures.

4. A security incident report from the current contracted security provider will be completed at the time of incident. When all investigative leads have been followed without success and further investigative action is deemed to be unproductive; or the case may remain open and under investigation by local law enforcement. In some cases, the security incident report may be the final or closing report.

VIII. Communication

A. Communication between Risk Management and employees and our contractors is necessary in maintaining a safe and secure work environment. OC San utilizes various

methods of communication strategies to enhance and broaden our approach to and communication network.

B. OC San implements the following strategies to improve and enhance workplace security:

1. OC San utilizes various safety and security committees to discuss security policies and procedures, security related events, and other related issues to improve OC San's security program.

2. New employee orientation(s) on OC San workplace security policies, procedures, and workplace practices.

3. Posted or distributed workplace security bulletins.

4. Utilize various District wide publications such as the SanBox, The Pipeline, and The Digester to inform OC San employees on upcoming security programs and policy initiatives.

5. A mechanism to report security concern or related issue through either SharePoint or another web-based reporting system.

6. Web based and non-web-based training programs.

IX. Access Control

A. OC San utilizes access control technologies to limit and restrict access to OC San wastewater treatment plants, buildings, rooms, and other critical assets which to protect information technology, employee information, and other critical assets that which contribute to the treatment process.

B. All OC San employees and primary contractors will be issued and are required to wear the authorized OC San ID card while on all OC San properties. Employees who work around machinery may place their access card in a secure place on their person during operation to prevent cards from being pulled into machinery which may create risk of injury. ID cards will solely be utilized by individuals who they were issued to.

C. Contractors and/or subcontractors who are not issued identification cards shall be issued temporary identification badges by contracted private security at the designated entry control point at both Plants 1 and 2.

D. No employee or contractor shall allow other individuals to use their issued identification badge to access any OC San facility or structure. The loaning of identification cards could result in disciplinary action in accordance with HR policy(s).

E. No security access control activity log will be released to any employee without the prior approval of the Safety and Health Supervisor or Human Resources and Risk Manager.

F. The ID cards remain property of the Orange County Sanitation District. Persons issued ID cards shall maintain the ID card in good condition, avoid contact with surfaces that can scratch or cause accelerated wear, avoid placing an ID card in the proximity of magnetic sources or fields and ensure that cards are placed in secured location to protect against loss, theft, or unauthorized use.

G. All persons are required to renew their ID card photograph every five (5) years.

H. Employees should ensure that they scan into doors that may already be open prior to entering. This will aid Risk Management, Security, and IT to identify your location in the event of a disaster or other incident.

I. Employees and Contractors shall report the loss or theft of the ID card or the recovery of a lost or stolen ID card to Risk Management. Upon notification, Risk Management will immediately deactivate (block) the lost or stolen ID card from permitting electronic access to all OC San facilities. Risk Management will issue a new card with equivalent credentials.

J. Employees who have been separated from employment or placed on administrative leave or shall return his or her ID card to Risk Management or a Human Resources representative. A Risk Management representative will temporarily suspend electronic access to all OC San facilities.

K. Risk Management is responsible for destroying all returned identification cards.

X. Visitor and Access Control

A. Public Meetings

1. Visitors attending public board meetings which includes the Steering, Administration, Operations Committees, or any other meeting of a legislative body are not required to show identification in accordance with the Brown Act Ch. V § 54953.3. The Brown Act states that visitors attending public meetings “will not be asked to register or identify themselves or pay fees to attend public meetings”.

2. Security will be notified in advanced that a public meeting will be taking place and will prepare generic visitor badges prior to the start of the meeting.

B. Visitors

1. All visitors must show a government issued photo identification and sign-in prior to entering Plants 1 and 2 and other applicable off-site locations. Visitors must obtain a temporary visitor identification badge by providing one of following identifications to verify or establish identity:

   a. Non-Expired U.S. Driver’s License

   b. Identification card issued by federal, state, or local government agencies, provided it contains a photograph and information including the name, date of birth, sex, height, eye color and address including U.S. Citizen ID Card (INS Form I-97), and ID for use of Resident Citizen in the U.S. (INS Form I-179);

   c. U.S. Passport.

   d. Native American Tribal document

2. Visitors who do not have on their person a valid identification will not be permitted to enter.

3. Visitors must complete an authorized COVID-19 screening prior to entry. Security has ability to initiate screening process via the QR code; however, visitors should be provided the approved Visitor COVID-19 Self Screening Questionnaire 24-hours prior to their visit by the requesting OC San employee.

4. Security will issue the visitor a time activated security badge with the visitor's photo which will change color within 24 hours of issue to show authorized visitation has expired. Security will brief the visitor to turn in their temporary badge when leaving the plant.

5. The OC San Visitor Registration System will be the system in which all visitors to include subcontractors will be entered prior to entry into Plants 1 and 2. OC San employees are required to enter visitors into the system when they become aware that they will be visiting either Plants 1 or 2. Security will turn away any persons who are not in the Visitor Registration System and who cannot be verified by an OC San employee.

6. Visitors attending a "tour" will be issued a generic "TOUR" badge with no expiration date and will be granted access to the plant with minimal delay. Tours includes individuals or groups who desire to visit the plant for personal or educational reasons. Such visits may be desired by educational, regulatory, technical, or scientific organizations.

7. Temporary visitor identification badges and parking permits are required for package delivery service drivers which included but is not limited to FedEx, UPS, or the United States Parcel Service.

8. Temporary visitor identification badges are not required for first responders responding to an incident or emergency.

9. OC San employees will work with their assigned contractors to ensure that all sub-contractors are entered into the visitor registration system. Security will be responsible for verifying that the sub-contractor is authorized prior to entering the Plant. Security will verify and process their identification prior to entry. Subcontractors are required to check in with Plant Operations prior to beginning their work assignment.

10. Subcontractors will be issued a temporary visitors' badge with their name, picture, organization or place of business, and the expiration date when their work is expected to be completed. Additionally, the subcontractor will be issued an orange Multi Day Parking Permit which will be set to expire within 30 days of issue or the date their work assignment will be completed; whichever comes first.

C. Facility Protection

1. General

   a. OC San takes a strategic approach to physical protection using specifically defined areas with increased levels of security according to the Physical Security Plan. There are two defined security areas: Protected Process Area (PPA) and Vital Operation Area (VOA). Protection of critical facilities involves access control, door alarms, signage, CCTV, or other types of physical and technological

barriers which, deter, deny, or restrict access to individuals or groups of individuals who may want to inflict harm to OC San employees, contractors, and visitors. OC San employees and contractors are responsible for maintaining the safety and security of all OC San's facilities throughout the service area.

b. Employees and Contractors shall notify the Plant No. 2 Operations Center at (714) 593-7625 prior to obtaining access to all OC San Pump Stations.

2. After Hour Access and Reporting

   a. All visitors scheduled to enter OC San treatment plants after hours shall be entered into the OC San visitor management system located on the SharePoint. Individuals shall notify Risk Management when scheduling after-hour access for all employees, contractors, and other visitors Operations shall also be notified a minimum of 24-hours in advance prior to accessing OC San plant process areas during non-business hours and visitors shall check in with the Control or Operations Center(s) prior to reporting to their job site or office Normal business hours are 6:00am to 5:00pm Monday through Friday (M-F). Contractor Gates are generally open from 5:30am to 3:30pm; however, hours may vary due to the needs of OC San.

   b. The Operations Control Center Technician at Plant 1 can be reached at (714) 593- 7025; the Operations Technician at Plant 2 can be reached at (714) 593-7625. The Operations Control Center Technician will enter the information into the operations log and make the appropriate notifications to Operations staff.

   c. Contractors and OC San Operations coordinate activities at weekly planning meetings and/or by email exchange to discuss any potential impacts to evening and nighttime plant operations. Names, dates, and contact information should be provided by the contractor to O&M Management when coordinating access during non-business hours. O&M is responsible for the notifying all applicable parties to include Supervisors or Operators who will be affected or involved.

   d. If a work activity or site visit must occur outside of the scheduled environment of the weekly planning meetings, the responsible party will contact the Operations or Control Center and/or the Operations supervisor or his designee at the appropriate facility and obtain authorization to proceed prior to the entrance of external staff into the treatment facility process.

3. Vital Operation Areas

   a. The following areas have been designated as vital operation areas (VOA), which contain additional security protections as mentioned above:

      1) VOA facilities at Plant One:
         - Control Center Room
         - Central Power Generation Facility
         - Power building 2
         - Power building 3A
         - Power building 4
         - Power building 5
         - Power building 6
         - Power building 7
         - Power building 8

- 12Kv Service Center
- Blower Building Turbine Generator Room

2) VOA facilities at Plant Two:

- 12Kv Distribution Center C
- 12Kv Distribution center A
- 12KV Distribution Center B
- 12KV Distribution Center D
- 12Kv Electrical Service Center
- Central Power Generation Building
- Distribution Center H
- Distribution Center J
- Distribution Center K
- EPSA Electrical Building
- EPSA Standby Power Building
- Headwork's Standby Power
- Headworks Power Building A
- headworks power building b
- Operation Center
- PDF Building
- Power Building b
- Power Building C
- Power Building D
- Primary Power Building A
- SBF Electrical Building
- Water In (influent pump station)
- Water Out (OOBS, EPSA)
- Warehouse
- City Water Station
- Gas Compressor Building

b. OC San employees are responsible in the securing of all OC San facility and shall abide by all access control procedures in accordance with this SOP.

XI. Parking Permits, Traffic Control, and Parking

A. Parking Permits

1. OC San employees and contractors shall clearly display issued parking permits on the rearview mirror of their vehicle while operating a motor vehicle or parked on OC San property. Individuals may place permits on the driver's side of the dashboard if vehicle does not have a rearview mirror. The purpose of the parking permit is for the safety and security of all OC San employees, visitors, and contractors. Visible parking permits aid security in authorizing access to designated personnel.

2. The following long-term and temporary parking permits are authorized on OC San property:

   a. OC San Employee (Yellow Placard or Sticker)

   b. OC San Contractor (Red Placard or Sticker)

c. VIPs (Blue Placard or Sticker)

d. Temporary Long-term (Orange Placard or Sticker)

e. Temporary Single Day Parking Permit (Yellow 24-Hour Card)

f. Temporary 30-Day Parking Permit (Orange 30-day Card)

B. Traffic Control and Parking

1. Unless posted, the speed limit throughout Plants 1 and 2 is 15 miles per hour (mph). Some roadways in the plants are 10 mph. All vehicles will follow all posted traffic control signs. Employees should report traffic control violations if necessary.

2. OC San vehicles shall be operated in compliance with all applicable state and local laws and ordinances. The consequences for failing to comply with any law, regulations, or ordinance, such as speeding citations or toll road fines, will be the responsibility of the driver. Drivers who are found to have violated posted speed limits while driving on OC San property or find any indications of misconduct involving vehicles may be grounds for disciplinary action up to and including termination. It is the intent of this policy that unsafe behavior be identified and corrected. Should discipline become necessary, it will follow the OC San Personnel Policies and Procedures Manual and Memorandum of Understanding (MOU), as applicable.

3. All OC San employees, whether full-time or part-time, including OC San hired contractors must provide OC San with the state issued vehicle license plate number, vehicle year, make, and model of the personal or commercial vehicle(s) they intend to drive and/or park on OC San property. Parking permits will not be issued without first providing OC San with a state issued vehicle license plate number.

4. If Reflective Parking Permits are authorized and are in use, they will be placed inside of the windshield located on the top left driver's side.

5. Parking permits are not required for non-motorized vehicles, motorcycles, or scooters. All non-motorized vehicles will be required to provide their license plate number to Risk Management and will be logged into the badge control system so that their vehicle can be identified when on site. All motorized vehicles will be required to show security their OC San identification prior to entering Plants 1 and 2.

6. Personal vehicles or OC San Fleet vehicles will not block fire hydrants or park in designated fire lanes. Handicap parking spaces are not to be utilized by a vehicle unless they possess a disabled person placard or license plate.

7. No vehicle will be parked to interfere with or impede the normal flow of traffic or operation of the facilities or otherwise present a traffic hazard.

8. There is no overnight parking of personal vehicles in any OC San parking lot, unless prior clearance has been obtained from Risk Management. Exceptions include those employees who are on OC San work related overnight travel. If on overnight travel, advise security of the location, make, and model of the vehicle.

9. There is no overnight parking of personal vehicles at any pump station.

10. Only contractors, subcontractors and their employees may park within designated construction parking areas.

11. OC San vehicles shall be parked and locked in assigned parking spaces or designated areas.

12. OC San vehicle keys are to remain in a key box located in a secure area.

13. Employees who take OC San Fleet Vehicles home while on call shall park vehicle in covered carports, garages, or driveways is possible. Parking on city or private streets should be avoided.

XII. Civil Demonstrations

A. Civil demonstrations can range from mildly disruptive activities, such as peaceful picketing, to violent and uncontrolled events, including civil unrest and looting.

B. Risk Management will work with the PAO to advertise and distribute current information on civil demonstrations within our area of operations. OC San Risk Management and the Public Affairs Office will monitor civil demonstrations and communicate with the local police agencies as required.

C. OC San employees and contractors should avoid interacting with demonstrators.

XIII. Man-Made Threats

A. OC San employees, contractors, and contracted security will respond to man-made threats utilizing procedures identified in the OC San Integrated Emergency Response Plan (IERP), Annex 5 (Manmade Threats).

B. Manmade Threats include the following:

1. Terrorism

2. Insider Treats

3. Active Shooter

4. Bomb Threats

XIV. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XV. References

Policy F80, Workplace Violence and Weapons

Policy 5.18, Use of District Property

Policy 5.19, Vehicle Usage

Integrated Emergency Response Plan (IERP)

Department of Homeland Security Ensuring Building Security Purpose

XVI. Revision History

Version	Date	By	Reason
1.0	09/14/220	Rivera, George	New
2.0	08/11/2020	Harp, Derek	Periodic Update – Refer to Program Change Log
3.0	12/13/2021	Frattali, John; Harp, Derek	Annual Program Review – No changes with exception to rebrand.

ORANGE COUNTY SANITATION DISTRICT	SOP-209 (Ver. 3) Security Advisory Committee
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of this SOP is to define the authorities and responsibilities to carry out programs and operations that promote safety and security of individuals and property; and establishes a Security Committee for coordination of the Orange County Sanitation District's (OC San) security policies and procedures.

OC San is committed to the safety and security of employees, contractors, and visitors, with expert guidance from Risk Management staff and the Security Committee (Committee), and through the establishment of reasonable practices that:

- Support a safe and secure environment in all facilities owned and/or operated by OC San.
- Promote safety and security through OC San's policies and procedures.
- Provide an appropriate level of security on OC San facilities.
- Safeguard OC San's property and physical assets.

II. Organizational Units Affected

This policy applies to all Orange County Sanitation District (OC San) employees, visitors, and all persons who perform services for the OC San, including interns, volunteers, and persons working under contract.

III. Policy

The Risk Management Division is charged with ensuring the safety and security of employees, contractors, and visitors on OC San facilities.

The purpose of the Committee is to provide a formal means for employees to effectively participate with management in the identification and resolution of security concerns, and to promote the safety and security of OC San. Risk Management staff and the Committee will work in conjunction to safeguard physical and cyber resources, identify conditions or circumstances that may pose risks to the safety and security of the facilities, and prepare OC San to effectively respond to emergencies. The Committee shall make security recommendations to Risk Management as outlined in Sec. 5.2 of this SOP for evaluation and implementation, as appropriate.

All staff, contractors, and visitors share responsibility for the safety and security of the organization and must operate in compliance with applicable federal and state regulations and OC San policies.

IV. Composition of the Committee

The Committee will be comprised of fourteen (14) members who serve in a leadership and/or supervisory role throughout OC San, as follows:

- Safety & Health Supervisor
- Security & Emergency Planning Specialist
- Executive Management Team Member
- Professional Group Representative
- Facilities Maintenance Supervisor
- Collections Manager
- Materials Control Supervisor
- Plant 1 Chief Plant Operator
- Plant 2 Chief Plant Operator
- Construction Management Supervisor
- Engineering Planning Supervisor
- Information Technology Supervisor (Cyber Sub-Committee)
- Information and Technology Analyst(s) (Cyber Sub-Committee)

The Committee will be comprised of a Cyber Subcommittee. The subcommittee composition will include the Information Technology Supervisor and Information Technology Analyst(s).

V. Responsibilities and Duties

A. Risk Management Responsibilities and Duties:

1. Chair quarterly Committee meetings.
2. Development of the quarterly meeting agenda.
3. Establish sub-committees as needed for special projects.
4. Communicate changes in new and existing security policy and procedures.
5. Obtain information and feedback on security policy and procedures and observations.
6. Obtain suggestions on security improvement.
7. Obtain feedback and buy-in for inter- and intra-organizational exercises.
8. Maintain documentation and records.
9. Maintain and update the Security Committee SharePoint page.

10. Provide presentations regarding committee status and performance to the Executive Management Team (EMT).

11. Ensure effective communication of existing and updated security policies to OC San employees.

B. Committee Member Responsibilities and Duties

1. Review and recommend current and future security procedures and projects.

2. Collect security observations and suggestions for Committee review.

3. Provide Committee updates to their department employees.

4. Review and recommend collective security and emergency response exercises.

5. Provide observations, input, and recommendations on strategic security and emergency response issues.

6. Enhance the safety and security of our organization's critical infrastructure and emergency response capabilities.

7. Ensure that security measures will be considered at the earliest stage of new projects, such as the expansion of plant critical infrastructure.

8. Review findings and corrective actions of reported security incidents.

C. Departmental Responsibilities and Duties

1. Department Heads and individuals in supervisory and management roles are responsible for ensuring that employees under their supervision are aware of safety and security policies and the procedures for reporting security problems, accidents, emergencies, crimes, and threats.

2. They are also responsible for ensuring that emergency preparedness and continuity of operations plans are followed and communicated to all employees to ensure familiarity with, and coordination between departments and emergency responders.

D. Individual Responsibilities and Duties

1. Individuals are responsible for being aware of, and complying with, OC San policies and procedures, and applicable law.

2. Employees should take any threat or violent act seriously and report acts of violence or threats to the appropriate authorities as set forth in OC San policies.

VI. Meetings

The Committee will meet once every quarter. Meeting minutes will be recorded and maintained by Risk Management. Risk Management may call a meeting if required by the EMT or if there is another urgent security issue.

The Committee members will attend and actively participate in all meetings. Notification must be made to Risk Management if any member of the Committee cannot be in attendance. On the rare occasion that a committee member cannot attend, they will be required to provide an alternate in their place and he/she must be prepared to fully participate.

Committee members who were not present for the quarterly meeting will have the opportunity to submit suggestions within 30 days after the receiving completed minutes from Risk Management.

VII. Recordkeeping

All records concerning Committee activities, i.e., inspections, findings, recommendations, and actions, will be maintained by Risk Management.

The record of minutes will be facilitated and stored by Risk Management and will be saved on the Risk Management Security SharePoint site.

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VIII. References

SOP-208 Workplace Security Policy

OC San Personnel Policy 1.3 Workplace Violence & Weapons

OC San Personnel Policy 5.1 Rules of Conduct

IX. Revision History

Version	Date	By	Reason
1.0	05/11/2019	Harp, Derek	New
2.0	09/25/2020	Frattali, John	Periodic Update – Refer to Program Change Log
3.0	12/13/2021	Frattali, John	Annual Program Update – Rebrand Only

ORANGE COUNTY SANITATION DISTRICT	SOP-304 (Ver. 3) Mobile Equipment
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The safe operation of material handling, personnel lifting, and other mobile equipment on and around the workplace is essential. To help prevent injuries and reduce the risk of losses associated with operating and maintaining mobile equipment, Orange County Sanitation District (OC San) has developed the Mobile Equipment Program to establish safety rules, procedures, and training requirements for use of such equipment.

Mobile equipment includes powered industrial trucks (forklifts), utility carts, aerial work platforms (AWP), scissor lifts, front end loaders, industrial tow tractors, and bicycles.

Contractors who require mobile equipment shall adopt a plan that matches this policy. All Contractors and their Subcontractors must enforce this program while at any OC San property.

The intent is to ensure that any person who operates or maintains mobile equipment is trained, certified, and/or authorized.

II. Background

The Mobile Equipment Program must be supplemented by good job management, safety control, and the application of sound principles of safety, training, inspection, maintenance, application, and operation consistent with all data available regarding the parameters of intended use and expected environment.

Since the equipment operator has direct control over the application and operation of the equipment they are operating, conformance with good safety practices in this area is the responsibility of the equipment operator.

III. Definitions

Aerial Lift Platform (AWP): a vehicle-mounted device with telescoping or articulated arms used to position a platform to access work area at heights. Other types of elevating and rotating lifts: Extensible Boom Platforms, Aerial Ladders, Articulating Boom Platforms, Platform Lift, Vertical Towers and Ladder Trucks. Also known as a Man Lift.

Authorization: Authorized about an employee's assignment. Selected by the employer for that purpose.

Bicycle: A device upon which any person may ride, propelled exclusively by human power through a belt, chain, or gears and having one or more wheels.

Certification: Documentary proof of the successful completion of a course of training.

Forklift: A mobile, power-driven vehicle used for lifting, moving, and stacking/tiering materials. Also referred as a Powered Industrial Truck or PIT.

Industrial Tow Tractor: A high power low speed industrial vehicle designed primarily to tow non-powered trucks, trailers, or other mobile loads. The “mule” used at the rag and grit bins.

Loader: a self-propelled machine with a shovel or bucket at the end of articulated arms, used to raise earth or other material and load it into a dump truck. Also, called a front loader, front-end loader, track loader, bucket loader, or skip loader.

Scissor Lift: A self-propelled machine with an elevating platform which can be moved into place, then raised and lowered to various heights to access work; and be powered by electricity, gasoline, and diesel.

IV. Responsibilities

A. Risk Management

1. Shall establish, implement, and maintain the Mobile Equipment Program which is designed to eliminate or minimize employees from the hazards of mobile equipment.

2. Provide training to employees required to operate mobile equipment on the various equipment used in their tasks, as well as the precautions, and safe work practices to complete each task.

3. Maintain all records relating to operators and the equipment they are authorized to use. Operators will have access to all license of equipment they are authorized to use.

4. Investigate mobile equipment accidents.

B. Supervision

1. Support and implement rules and regulations outlined in per this program.

2. Ensure only qualified and authorized employees operate mobile equipment.

3. Investigate causes of incidents related to mobile equipment and assign appropriate corrective actions.

4. Ensure each employee has completed training and received qualification to operate each specific piece of equipment. Verify the employees are completing the pre-use inspection checklists.

C. Employee

1. Successfully complete classroom and hands-on training to be authorized for use of mobile equipment, where applicable.

2. Shall qualify on each specific model of equipment they will operate, regardless of class similarities.

3. Checkout forklifts, aerial work platforms, scissor lifts, and other mobile equipment as required by Warehouse and Fleet Services.

4. Shall complete a pre-use inspection prior to each use. Immediately remove equipment from service that is not in proper operating condition.

5. Read the equipment's Operation and Maintenance manual and become familiar with the safe operation of the equipment.

6. Follow safe operating practices.

D. Fleet Services (Service and Maintenance)

1. Prior to being placed into service, the equipment must be inspected to ensure equipment is in accordance with manufacturer specifications.

2. Collect and supply pre-use checklist on for required mobile equipment. Provide to Risk Management for retention.

3. Only authorized employees can perform service or make repairs on mobile equipment.

4. Maintain service records per OC San retention policy.

V. Pre-Use Inspections

A. Pre-use inspections must be completed prior to each use of the equipment. This consists of a visual inspection and operational check consistent with manufacturer's instructions. If the equipment will be used by one person periodically throughout their shift, then only one inspection is required prior to the first use of the day it is used. If the equipment is shared, each person using the equipment shall complete their own inspection.

1. Documented inspections required prior to each use for aerial work platforms, scissor lifts, front end loader, and forklifts. Inspection booklets provided on each equipment.

2. Utility carts and industrial tow tractors shall be visually inspected prior to use.

B. If the inspection identifies deficiencies that render the equipment unsafe to operate, then the equipment must be tagged out of service and reports made to Fleet Services. The equipment shall not be used until repairs are made.

C. Equipment that requires a documented inspection is provided with an inspection checklist book. The checklist must be left with the equipment. If the inspection book is full, notify Fleet Services for a new inspection book. Fleet Services will deliver the completed inspection book to Risk Management for retention.

VI. Maintenance

A. Mobile equipment shall be designed, constructed, and maintained in accordance with the manufacturer's requirements and applicable standards.

B. Equipment maintenance shall only be performed by Fleet Services or an authorized representative of OC San, as determined by Fleet Services.

C. Mobile equipment shall be kept in a clean condition free of debris, oil, and grease.

D. Equipment identified as not being in proper operating condition shall be tagged out of service and reported to Fleet Services.

VII. Rules for Safe Operation

A. General

1. Never operate a piece of equipment unless trained and authorized to do so. Only trained and authorized personnel may operate and access mobile equipment. At no time is an OC San employee to operate any mobile equipment without the proper training.

2. All mobile equipment must be pre-inspected daily and recorded on the applicable pre-use inspection checklist. Always report any problems or malfunctions to your supervisor immediately.

3. Appropriate personal protective equipment shall be worn when operating mobile equipment (hard hat, safety glasses, gloves, appropriate footwear and fall protection gear).
   a. If the equipment is equipped with rollover protective structure (ROPS), then hard hats can be taken off while in the equipment cab.
   b. If the equipment has an enclosed cab, then safety glasses can be omitted while in the cab of the equipment.

4. Equipment controls shall be plainly marked as to their function.

5. Be aware of your surroundings and changes on the jobsite.

6. Do not exceed the load limitations and rated capacity of each piece of equipment you are operating.

7. Operate at a safe speed (at posted speed limits when applicable). Mobile equipment must obey all posted traffic signs and stop at all stop signs.

8. Maintain a safe distance from energized power lines and overhead gas and piping systems.

9. Start/stop slowly to prevent load from shifting or spilling.

10. Seat belts shall be worn during equipment operation, if equipped.

11. Turn at a safe speed, smoothly and gradually. Be cautious on wet or slippery pavement.

12. Maintain a safe distance behind other vehicles.

13. Sound the horn when approaching intersections, blind spots, or other dangerous locations.

14. Use mirrors (if equipped) mounted at corners and in blind spots to see pedestrians and oncoming vehicles.

15. Never allow any person to ride in or on material handling equipment.

16. Equipment (excluding carts and tow tractors) shall have a working signal alarm while backing up.

17. Never raise or lower the load while traveling.

18. Passengers shall not ride on equipment unless equipped to accommodate passengers.

19. Always keep arms and legs inside the cab of the equipment.

20. Equipment operator will only use the equipment in the way it was designed and intended for.

21. No part of the employees' body shall be used to locate or attempt to stop a hydraulic leak.

22. Never leave a piece of equipment running while unattended.

23. Block/chock the wheels whenever a piece of equipment is left on an incline.

24. Always drive a loaded piece of equipment with the load on the uphill side.

25. Equipment shall not be loaded beyond its established load limit and the load shall be secured for safe transport.

26. Never let a gasoline/propane/diesel engine idle in an enclosed area.

27. Drive with the load tilted back and the forks raised only enough to clear the road.

28. Block and tie round objects so that they will not roll. Tie down all loads when possible.

29. Use approved cylinder racks when transporting compressed gas cylinders.

30. Never allow any person to stand or pass under the elevated portion of any truck, whether loaded or unloaded.

31. Park the piece of equipment carefully. Make sure the forks or bucket is on the ground, the brakes are set, the engine is off, and the keys removed.

32. Never use a forklift as an elevator for personnel.

33. Equipment shall only be lifted using approved equipment. Refer to equipment manual to determine if equipment can be used for lifting.

34. Do not drive on surfaces, decks, hatch, or manhole covers that are marked no traffic or foot traffic.

35. Smoking and vaping are prohibited in OC San owned equipment.

36. Do not operate equipment under the influence of alcohol or illegal drugs. If you are under the influence of a prescribed medication, please consult your physician before operating the cart or other machinery.

B. Utility/Golf Carts

1. Read the Owner's Manual before operating vehicle for first time.
2. Wear safety belts if cart is equipped with them.
3. Passengers are only allowed to ride on seats designed for passengers.
4. Keep all body parts inside the cart when the cart is in motion.
5. Drive with headlights on during low light time of days.
6. Do not drive on public highways or streets.
7. Drive slowly when making a turn.
8. Do not drive over loose objects, holes, or bumps.
9. Keep to the right under normal conditions.
10. Maintain a safe distance from all objects.
11. Always keep the vehicle under control.
12. Sound the horn when backing if cart is not equipped with a backup alarm.
13. Always keep a clear view ahead.
14. Do not loan carts to other organizations or companies.
15. Drivers and passengers must remain seated while the vehicle is moving.
16. Towing is allowed on those carts originally designed for towing.
17. When the cart is not in use, the operator will place the cart control in the neutral position turn off the cart. If the cart is equipped with a hand brake, the brake shall be applied.
18. Carts must never be parked where they will block emergency equipment, pedestrian aisles, doorways, intersections, or the normal traffic flow.

C. Aerial Work Platform / Scissor Lifts

1. Operate equipment in accordance with the manufacturer's operating instructions and safety guidelines.
2. Users to be trained in fall protection, utilizing a full body harness, and approved self-retracting lanyard or fixed length lanyard. Users must tie off to manufacturer approved anchorage points.

3. Guardrails shall be in place around the perimeter of the working platform, and access gates or openings shall be properly closed per manufacturer's instructions.

4. Occupants shall maintain a firm footing on the platform floor. Climbing on mid-rail or top rail is prohibited. The use of planks, ladders, or any other device is prohibited.

5. Do not operate equipment in storms (high wind, thunderstorms) that compromise the safety of personnel. Refer to the operation and safety manual for each equipment to determine maximum wind speed.

6. Only properly secured tools and materials, which are evenly distributed and safely handled by persons working on the platform, shall be on the platform while it is being moved. Tools and equipment can be tied off or tethered.

7. Except in the case of emergency, the lower-level controls of the lift shall not be operated unless permission has been given by the person in the lift.

8. Maintain clearance when working with an overhead hazard or near electrical lines.

9. When working in elevated positions, assure all platform gates are in the closed position.

10. All features that were received on the equipment from the dealer or manufacturer must be in the intended working condition, and not disabled, tampered, or removed from the equipment.

11. Use a spotter when working near building, equipment, or powerlines.

12. Shall have in place a means of rescue should a person fall out of the basket, or the equipment become stuck in an elevated position.

D. Powered Industrial Trucks (Forklifts)

1. No riders shall be permitted on the forklift unless provided with adequate riding facilities.

2. Employees shall not ride on the forks of lift trucks.

3. Employees shall not place any part of their bodies outside the running lines of an industrial truck or between mast uprights or other parts of the truck where shear or crushing hazards exist.

4. Employees shall not be allowed to stand, pass, or work under the elevated portion of any industrial truck, loaded or empty, unless it is effectively blocked to prevent it from falling.

5. The driver shall slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.

6. The driver shall look in the direction of travel and shall not move a vehicle until certain that all persons are in the clear.

7. Trucks shall not be driven up to anyone standing in front of a bench or other fixed object of such size that the person could be caught between the truck and object.

8. Grades shall be ascended or descended slowly.

9. When ascending or descending grades more than 10 percent, loaded trucks shall be driven with the load upgrade.

10. On all grades the load and load engaging means shall be tilted back if applicable and raised only as far as necessary to clear the road surface.

11. The forks shall always be carried as low as possible, consistent with safe operations.

12. When leaving a vehicle unattended, the brakes must be set, the mast is brought to the lowered vertical position, and controls placed in neutral.

13. Forklifts shall not be run onto any elevator unless the driver is specifically authorized to do so. Before entering an elevator, the driver shall determine that the capacity of the elevator will not be exceeded. Once on an elevator, the industrial truck's power shall be shut off and the brakes set.

14. Motorized hand trucks shall enter elevators or other confined areas with the load end forward.

15. Vehicles shall not be operated on floors, sidewalk doors, or platforms that will not safely support the loaded vehicle.

16. Prior to driving onto trucks, trailers and railroad cars, their flooring shall be checked for breaks and other structural weaknesses.

VIII. Fueling and Recharging

A. Gasoline or Diesel Fuels

1. No equipment shall be refilled while the engine is running.

2. Fueling shall be done in such a manner that likelihood of spillage is minimal. If a spill occurs it shall be completely evaporated, or equivalent action taken to control vapors before restarting the engine.

3. A UL listed pump shall be provided to service the fuel tanks of all gasoline or diesel engine driven equipment, unless done in a safe manner by a gravity flow system with a metal-to-metal contact between the containers and the fuel tank.

4. Refueling with portable containers shall be done using Class 1 or Class 2 safety containers equipped with an automatic closing cap and flame arrester.

5. Fueling shall not take place near open flames, sparking or arc producing equipment.

6. Fuel tank caps shall be secured before starting the engine.

7. The storage and handling of liquid fuels such as gasoline and diesel shall be in accordance with NFPA Flammable and Combustible Liquids (NFPA No. 30).

B. Liquid Propane

1. Follow manufacturer's recommendations.

2. Make sure the equipment has stopped moving and forks or boom and platform are lowered to the ground or floor.

3. If forks are loaded, lower the load to the ground or floor.

4. Turn off engine and set emergency brake.

5. If, the equipment is on an incline, set wheel chocks under tires.

6. Wear gloves that resist cold temperatures, close tank supply valve, disconnect the flex hose connection, open holding straps, and remove the propane tank.

7. Propane tanks can be heavy and difficult to access, ask for assistance to avoid injury.

8. Place a verified full tank back into place, secure holding straps and connect the flex hose connection.

9. Open the propane tank supply valve and restart the mobile equipment.

10. The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58).

C. Electric Equipment

1. Equipment shall only be charged in approved locations.

2. Turn off the engine and set parking brake and lower any attachments.

3. Prevent open flames, sparks or arc producing equipment in charging areas.

4. Ensure that vehicles are plugged into approved charging receptacles. Use only electrical cords that have been approved by Fleet Services and Risk Management.

IX. Bicycles

A. Every person and employee riding bicycles on OC San property shall abide by the same rules and are subject to duties applicable to the driver of a vehicle.

B. Every employee who operates a bicycle shall conduct a pre-use inspection before using the bicycle. The inspection will involve checking the tires for proper inflation, handlebar grips, drive chain slack, loose fenders, bent tire rims and steering forks, and damage to the seat.

C. No employee shall operate a bicycle unless it is equipped with a brake.

D. No employee shall operate a bicycle that is confiture and sized to prevent the operator from safely stopping, supporting it in the upright position with at least one foot on the ground for stopping and starting.

E. Bicycles shall not be modified in any way.

F. Every OC San bicycle that is operated during darkness shall be equipped with a lamp emitting a white light which illuminates the roadway and is visible from 300 feet and a red reflector mounted on the rear of the bicycle visible from 500 feet. Bicycle pedals shall be equipped with white or yellow reflectors visible from 200 feet. A lamp emitting a white light attached to the bicycle operator that is visible from 300 feet, can be used in place off a lamp attached to the bicycle.

G. Any employee operating a bicycle on OC San property shall abide by all motor vehicle operating rules including posted traffic and speed limit signs.

H. Any employee operating a bicycle on OC San property shall ride as close as practicable to the right-hand curb or edge of the roadway.

I. When overtaking and passing another bicycle or electric cart, proceed in the same direction.

J. Avoid conditions including, but not limited to, fixed, or moving objects, poor road conditions, uneven road surfaces, substandard lane width that make it unsafe to continue along the right-hand curb or edge of the road.

K. Do not ride a bicycle on sidewalks but walk the bike while on sidewalks.

L. No employee operating a bicycle shall attach themselves to or hold on to any vehicle, electric cart or bicycle operated by another individual.

M. No person or employee operating a bicycle shall ride on any other part of the bicycle other than the regular attached seat.

N. No person or employee operating a bicycle shall allow anyone to ride as a passenger other than on a separate attached seat.

O. No persons or employees operating a bicycle shall carry any package, bundle, or article which blocks their vision of the road or prevents the operator from keeping at least one hand upon the handlebars.

P. No persons or employee shall place or park their bicycle to impede or block the normal movement of pedestrian traffic on sidewalks and/or bicycle, electric cart, or vehicle traffic on in-plant roadways.

Q. No person or employee operating a bicycle shall wear any headset covering or earplugs in both ears. Exceptions for persons or employees wearing personal hearing protection designed to attenuate injurious noise levels and which do not inhibit the wearers' ability to hear horns from motor vehicles or backup alarms construction vehicles.

X. Training

A. General

1. Only authorized employees may operate mobile equipment. An employee may become authorized after the successful completion of training and evaluation.

2. Utility/golf carts must be operated by persons who have a valid California driver's license. Drivers must obey all posted traffic signs.

3. All operator training and evaluations are conducted by persons who have demonstrated the knowledge, training and experience to train powered industrial truck operators and evaluate their competence to Environmental Health and Safety.

B. Powered Industrial Trucks

1. Initial Training

   a. Initial training for forklift operators shall be conducted by qualified individuals or vendors who have sufficient knowledge, training, and experience in teaching the subject matter.

   b. Training has three parts:

      1) formal instruction such as a lecture, discussion, interactive computer learning, videotape and or written material (can be taken anywhere).

      2) practical training which includes hands-on demonstrations by the trainer and exercises by the trainee (on the model of forklift the worker will use).

      3) an evaluation of the effectiveness of the training by observing the operator's performance while doing actual work using the forklift. This evaluation must be repeated at least once every three years (must be at workplace).

2. Refresher Training

   a. Certified Operators attend refresher training every three (3) years.

   b. In addition, refresher training, including an evaluation of the effectiveness of the Certified Operator's training, will be conducted whenever one or more of the following occur:

      1) The operator has been observed to operate the forklift in an unsafe manner.

      2) The operator has been involved in an accident or near-loss incident.

      3) The operator has received an evaluation that reveals that the operator is not operating the forklift safely.

      4) The operator is assigned to drive a different type of forklift.

      5) A condition in the workplace changes in a manner that could affect safe operation of the forklift.

3. The training program shall emphasize safe and proper operation to avoid injury to the operator and others and prevent property damage. Topics may include:

   a. Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate.

   b. Similarities to and differences between the truck and the automobile

c. Truck controls and instrumentation.

d. Engine or motor operation (type of motive power and its characteristics).

e. Steering and maneuvering.

f. Braking method and characteristics, with and without load.

g. Visibility (including restrictions due to loading; forward and reverse).

h. Vehicle capacity (load handling capacity, weight, and load center).

i. Vehicle stability (with and without load, with and without attachments).

j. Load handling capabilities; forks, attachments.

k. Guards and protective devices for the specific type of forklift.

l. Any vehicle inspection and maintenance that the operator will be required to perform.

m. Refueling and/or charging and recharging of batteries.

n. Operating limitations.

o. Fork and attachment adaptation, operation, and use limitations.

p. Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicles that the employee is being trained to operate.

q. Surface conditions where the vehicle will be operated.

r. Composition of loads to be carried and load stability.

s. Load manipulation, stacking, and unstacking.

t. Pedestrian traffic in areas where the vehicle will be operated.

u. Narrow aisles and other restricted places where the vehicle will be operated.

v. Hazardous (classified) locations where the vehicle will be operated.

w. Ramps and other sloped surfaces that could affect the vehicle's stability.

x. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a build-up of carbon monoxide or diesel exhaust.

4. Except for training purposes, no OC San employee may operate a forklift without completing required training.

C. Aerial Work Platforms

1. Only personnel who have received instructions and training regarding the inspection, application, and operation of a specific aerial work platform, shall operate that AWP.

2. Training will be under the direction of a qualified, competent individual capable of determining an employee’s proficiency in knowledge and actual operation of the lift. This training shall include the recognition and avoidance of hazards associated with operation of the specific lift. Training shall include the following:

a. The purpose and use of operating manuals

b. Pre-start inspections
c. Responsibilities associated with problems or malfunctions affecting the operation of the aerial work platform
d. Factors affecting stability
e. The purpose of placards and decals
f. Safety rules and regulations
g. Operator warnings and instructions
h. The purpose and function of all controls
i. Actual operation of the aerial work platform

XI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XII. References

Title 8, California Code of Regulations, Subchapter 5, Group 1. Low-Voltage Electrical Safety Orders, Section 2229 – 2599

Title 8, California Code of Regulations, Subchapter 7, Group 4. General Mobile Equipment and Auxiliaries, Article 24. Elevating Work Platforms and Aerial Devices

Title 8, California Code of Regulations, Subchapter 7, Group 4. General Mobile Equipment and Auxiliaries, Article 25. Industrial Trucks, Tractors, Haulage Vehicles, and Earthmoving Equipment

XIII. Revision History

Version	Date	By	Reason
1.0	06/29/2011	Bauer, Wesley	New
2.0	08/31/2020	Stone, Jereme Frattali, John	Periodic Update – Refer to Program Change Log
3.0	12/13/2021	Stone, Jereme	Annual Program Update- Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-604 (Ver. 4) Confined Space Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The purpose of this Standard Operating Procedure (SOP) is to ensure safe practices are utilized by Orange County Sanitation District (OC San) staff and contractors prior to and during all work activities in or adjacent to confined spaces. The program is designed to prevent personal injuries, illness, and fatalities that can occur during confined space entry.

The program is intended to control and to protect employees from permit-required and non-permit required confined space hazards and to regulate employee entry into confined spaces. The program provides the basis for confined space identification, hazard assessment and control, training, and entry operations including procedures, permits, air monitoring, and rescue.

II. Background

The elements contained in this program must be implemented and followed in all work activities where entry into a confined space is necessary. Entry means the action by which any part of a person passes through an opening of a confined space. Entry includes work activities performed at the space and considered to have occurred as soon as any part of the Entrant's body breaks the plane of an opening, whether such action is intentional, or any work activities are performed in the space.

OC San is committed to protecting OC San staff and contractors working in or adjacent to confined spaces. This will be accomplished by ensuring the following occur:

1. Evaluate the workplace to determine if any spaces are a permit-required and non-permit required confined space and maintain an inventory of all confined spaces within the OC San treatment plants and pump stations.

2. Develop and maintain a written confined space program, including a confined space entry permit system. The program will be reviewed at least annually and in accordance with the program administration section of this standard. The confined space entry permit system warrants a space-specific hazard analysis.

3. Inform OC San staff and contractors of such confined spaces by posting signs, development, and review of Confined Space Job Hazard Analysis (JHA) for permitted spaces, Job Safety Analysis (JSA), and confined space entry permits.

4. Develop workplace specific entry procedures for permit-required confined spaces, including designation of personal protective equipment and implementation of engineering controls (i.e., control of hazardous energy, ventilation, fall protection).

5. Training and education for employees, primarily to understand and address critical confined space issues and provide practical skills for successful confined space work.

6. Review of canceled entry permits and incident reports to identify and correct, as necessary, inadequacies in the written confined space program.

OC San has developed this procedure in accordance with the state of California Occupational Safety and Health Administration (CALOSHA) regulations for Confined Spaces (Title 8, California Code of Regulations (CCR), Article 108, §5156 – 5159) and Confined Spaces in Construction (Title 8, CCR, Article 37, §1950 – 1962). The application of the required practices and procedures to protect employees from the hazards of entry into permit-required confined spaces has also been included in the program. This program also complies with consensus standard NFPA 350, *Guide for Safe Confined Space Entry and Work* (National Fire Protection Association 2016).

III. Applicability

This procedure applies to all work performed in a confined space at the OC San treatment plants, pump stations and the collection system by OC San staff and contractors.

This procedure does not apply to construction work regulated by Construction Safety Orders for Excavations (Article 6), Tunnels Safety Orders (Subchapter 20), and General Industry Safety Orders for Diving Operations (Article 152) and Pressurized Worksite Operations (Article 154).

IV. Definitions

Acceptable Entry Conditions – The conditions that must exist in a confined space, before an employee may enter that space, to ensure that employees can safely enter and work within the confined space. Acceptable entry conditions are listed in the program and entry permit.

Adjacent Space – Spaces in all directions from the subject space, including points of contact, internal and external, such as decks, sumps, floating roofs, secondary containment areas, interstitial spaces, under floors, supports, tanks tops and bulkheads.

Administrative Controls – Work procedures such as written safety policies, rules, supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to hazardous situations.

Air Changes Per Hour – An amount of air equal to the gross volume of air passing through a confined space in an hour.

Air Moving Devices – Term that includes exhaust, fan, or blower systems.

Atmospheric Monitoring – The act of using a portable or fixed gas monitor to sample the atmosphere in or around a confined space to determine the level of hazardous, gaseous contaminants present.

Attendant – A person who is qualified to be stationed outside confined spaces, who monitors authorized Entrants, and who performs specific Attendant duties.

Blanking or Blinding – The absolute closure of pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Breathing Air Quality – Uncontaminated air with an oxygen content between 19.5 and 22 percent. Sources of breathing air may be from the atmosphere or Grade D breathing air from a compressor or cylinder.

Bump Testing – A qualitative function check where a challenge gas is passed over the sensors of a gas monitor at a concentration and exposure time sufficient to activate all alarm indicators to present at least their lower alarm setting.

Carbon Monoxide – A colorless, odorless, and poisonous gas, produced by the incomplete combustion of natural and synthetic based fuels.

Chemical – Any compound, mixture, or solution in the form of a solid, liquid or gas that may be hazardous by virtue of its properties other than or in addition to flammability, or by virtue of the properties of compounds that might be evolved from hot or cold work.

Class 1 Division 1 – A location in which ignitable concentrations of flammable gases or vapors may exist under normal operating conditions or in which breakdown or faulty operation of equipment or processes and or maintenance work might release ignitable concentrations of flammable gases or vapors.

Class 1 Division 2 – A location where volatile flammable liquids or flammable gasses are handled, processed, or used, but in which the hazardous liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in case of abnormal operation of equipment.

Combustible Liquid – Any liquid having a flash point (open cup) at or above 80 degrees Fahrenheit (26.6 degrees centigrade).

Competent Person – One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Confined Space – A space that (1) is large enough and so configured that an employee can bodily enter and perform assigned work, (2) has limited or restricted means for entry or exit, and (3) is not designed for continuous occupancy.

Confined Space Entry – Includes ensuing work activities in a confined space and is considered to have occurred as soon as any part of the Entrant’s body breaks the plane of an opening into the space.

Confined Space Permit – A written record that authorizes specific work, at a specific work location, for a specific time. The permit is used for controlling and coordinating work to establish and maintain safe working conditions. The permit ensures that all foreseeable hazards have been considered and that the appropriate precautions are defined and carried out in the correct sequence.

Confined Space Rescue Service – The confined space rescue team designated by OC San or Contractor to rescue victims from within confined spaces.

Confined Space Rescue Team – A combination of individuals trained, equipped, and available to respond to confined space emergencies.

Continuous Human Occupancy – Intended as a place of regular work, where supplied with ventilation, lighting, and sufficient room to accomplish anticipated tasks.

Contractor – Organization or individual that provides goods and services to OC San under terms specified in a contract. The term contractor applies to contractors, subcontractors, consultants, service representatives and visitors.

Control – Action taken to reduce level of any hazard in a confined space using engineering methods, and then using these methods to maintain the reduced hazard level. Personal protective equipment is not a control.

Dangerous Air Contamination - An atmosphere presenting a threat of causing death, injury, acute illness, or disablement due to the presence of flammable and/or explosive, toxic, or otherwise injurious or incapacitating substances.

(A) Dangerous air contamination due to the flammability of a gas or vapor is defined as an atmosphere containing the gas or vapor at a concentration greater than 20 percent of its lower explosive (lower flammable) limit.

(B) Dangerous air contamination due to a combustible particulate is defined as a concentration greater than 20 percent of the minimum explosive concentration of the particulate.

(C) Dangerous air contamination due to the toxicity of a substance is defined as the atmospheric concentration immediately hazardous to life or health.

Degassing – The process of collecting, oxidizing, or treating vapors and gases expelled from tank or vessel to prevent or reduce the amount of volatile organic compounds released into the air during vapor and gas freeing operations.

Double Block and Bleed – Closure of a line, duct, or pipe by closing and locking two in-line valves and by opening a drain or vent valve in the line between the two closed valves.

Early Warning System – Method (i.e., alarm activated by sensor, lookout with communication device) used to alert Authorized Entrants and Attendants that an engulfment hazard may be developing.

Emergency – Any unexpected internal or external occurrence or event, which could endanger the confined space Entrants.

Engineering Controls – A method of reducing exposure to a chemical or physical hazard through the practice of elimination, design, redesign, isolation, or substitution.

Engulfment – The surrounding and effective capture of a person by a liquid or flowable solid that can be aspirated to cause death by filling or plugging the respiratory system, or that can

exert enough force on the body to cause death by strangulation, constriction, crushing or suffocation.

Entrant – Person authorized to enter a confined space and perform work.

Entry - The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Permit – A written, or printed document provided by an employer (OC San or Contractor) to allow or control entry into a confined space.

Entry Supervisor – Qualified person responsible for determining if acceptable entry conditions are present at a confined space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by the program.

Explosionproof – Equipment enclosed in a case that can withstand an explosion of a specified gas or vapor that might occur within it and preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within and that operates at such an external temperature that surrounding flammable atmosphere will not be ignited thereby.

Fall Arrest – A system intended to stop a worker’s fall before the worker hits the surface below.

Fall Restraint – A system to prevent a worker from traveling to an edge from which the worker could fall.

Flammable Liquid – Any liquid having a flash point (closed cup) below 80 degrees Fahrenheit and a vapor pressure not exceeding 40 psi at 80 degrees Fahrenheit.

Gas Monitor – A direct-reading, portable instrument designed to detect hazardous gases and vapors, including, but not limited to, oxygen, combustible gas, and a variety of toxic gas components or volatile organic compounds.

Hazard – Biological, chemical, mechanical, electrical, atmospheric, environmental, or physical agent that has or may have the potential to result in injury, illness, property damage, or interruption of a process or an activity in the absence of a control measure. Hazards may be adjacent, inherent, or introduced.

Hazards, Adjacent – Hazards that may exist in the area surrounding the space.

Hazards, Inherent – Hazards that exist as a permanent, essential characteristic or attribute of the space.

Hazards, Introduced – Hazards not normally associated with the spaces purpose or process but an introduced into the space or adjoining areas deliberately or inadvertently.

Hazardous Atmosphere – Any atmosphere that is oxygen enriched or deficient, contains a toxic or contaminant, is potentially flammable or explosive, or is immediately dangerous to life and health (IDLH).

Hot Work – Any work that creates a source of ignition, including, but not limited to, welding, cutting, grinding, open flames, frictional heat or sparks, smoking, and operation of internal combustion engines. A written permit is issued by OC San or Contractor for all hot work.

Hydrogen Sulfide (H_2S) – A colorless, flammable, and extremely hazardous gas. At low concentrations, the gas has a characteristic odor of rotten eggs. With continuous low-level exposure, or at high concentrations, a person loses their ability to smell the gas even though it is still present (olfactory fatigue). The gas is heavier than air and may travel along the ground.

Immediately Dangerous to Life or Health (IDLH) – Any condition which poses an immediate threat to life, would cause irreversible or immediate to adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Inert – The displacement of gas or vapors and oxygen (air) using an inert gas to eliminate the possibility of potentially flammable atmospheres in a confined space. Inert gases, such as argon and nitrogen, are nonreactive, nonflammable, and noncorrosive.

Intrinsically Safe – Equipment and wiring that are incapable of releasing sufficient electrical energy under normal or abnormal conditions to cause ignition of a specific hazardous atmosphere mixture.

Job Hazard Analysis (JHA) – A safety management risk assessment that is used to define and control the actual or potential hazards associated with any process, job, or procedure. JHA's are completed by the Risk Management Division prior any permit-required confined space.

Job Safety Analysis (JSA) – A safety procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each basis step of the job is to identify potential hazards and to recommend the safest way to do the job. A JSA should be completed for critical jobs, tasks, or activities.

Limited or Restricted Means for Entry or Exit – A condition that has a potential to impede movement into or out of a confined space, including but not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.

Lockout – The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lower Explosive Limit (LEL) – The lowest volume concentration of a combustible gas or vapor that when mixed with air will ignite, creating a fire or explosion (as known as the lower flammability limit).

Non-Permit Required Confined Space (NPRCS) – A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Occupational Exposure Limit (OEL) – The maximum amount of a hazardous material that a worker should be exposed to for a given period, as known as the permissible exposure limit (PEL) (OSHA), recommended exposure limit (REL) (NIOSH), and threshold limit value (TLV) (ACGIH).

Oxygen Deficient Atmosphere – An atmosphere within a confined space containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere – An atmosphere within a confined space containing more than 23.5 percent oxygen by volume.

Parts Per Million (PPM) – Parts of air by volume of vapor or gas or other contaminants.

Permissible Exposure Limit (PEL) – The maximum permitted 8-hour time-weighted average concentration of an airborne contaminant or physical agent.

Peak Value – The highest measured concentration of a combustible or toxic gas components and the lowest measured level of oxygen as detected by a gas monitor.

Permit-Required Confined Space (PRCS) – A confined space that has one or more of the following characteristics: (1) contains or has potential to contain hazardous atmosphere, (2) contains a material that has potential for engulfing an Entrant, (3) has an internal configuration such that an Entrant could become trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-sectional area, or (4) contains any other recognized serious safety or health hazard.

Personal Protective Equipment – All clothing and other devices worn by a worker to protect against workplace hazards.

Qualified Person – A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with problems relating to a particular subject matter, the work, or the project.

Rescue – Retrieving and providing medical assistance to, one or more employees who are in a permit space.

Rescue Attendant – A person who is qualified to be stationed outside a confined space to monitor rescue Entrants, summon assistance, and perform non-entry rescues.

Rescue Entrant – A person entering a confined space for the specific purpose of rescue.

Rescue Plan – A plan developed by the Entry Supervisor those details how a rescue will be conducted from a permit-required confined space entry.

Rescue Supervisors – The person(s) in charge of managing the actions of a team performing a rescue.

Rescue Team – OC San personnel qualified to perform rescue from permit spaces.

Retrieval Equipment – Life safety components that can include, but not limited to, harness, ropes, pulleys, cable winches, and portable anchors that can be assembled to create a retrieval system.

Retrieval System – Combinations of rescue equipment use for non-entry (external) rescue of persons from confined spaces.

Self-Contained Breathing Apparatus (SCBA) – A respirator worn by the user that supplies a respirable atmosphere that is either carried in or generated by the apparatus, and that is independent of the ambient environment.

Self-Rescue – The act of escaping unaided from a permit-required confined space.

Span Calibration – The adjustment of the gas monitor's sensor response to match the desired value compared to a known traceable concentration of test gas.

Standby Worker – Person assigned to perform work in support of confined space operations.

Supplied Air Respirator (SAR) – A respirator worn by the user that supplied as respirable atmosphere that is generated by a remote source and connected via a hose line.

Time Weighted Average (TWA) – An employee's calculated or measured exposure to an airborne contaminant during a workday.

Upper Explosive Limit (UEL) – Highest concentration of a gas or vapor in air capable of producing a flash of fire in presence of an ignition source. Concentrations higher than the UEL are too rich to burn. Also called the UFL or Upper Flammable Limit.

Ventilation – The changing of air within a compartment by natural or powered means.

V. Responsibilities

A. Risk Management is responsible for the development, documentation, and administration of this Confined Space Entry Program, which includes the following tasks:

1. Develop and update this program in accordance with applicable regulations and guidance documents.

2. Evaluate the program on an annual basis, including review of cancelled entry permits to verify conformance with this program.

3. Retain copies of cancelled entry permits for at least 12-months.

4. Provide confined space awareness training to District staff who may work adjacent to, but not make entry into a confined space.

5. Provide confined space Attendant, Entrant and Entry Supervisor training and annual retraining to employees who may enter a confined space.

6. Provide confined space Rescuer training to employee who are part of the Confined Space Rescue Team or provide a qualified training vendor.

7. Provide technical assistance regarding confined space entry protocol, atmospheric testing, personal protective equipment, hazard assessment and control, and rescue.

8. Complete a Confined Space JHA for all entries into a permit-required confined space.

9. Perform investigations of all incidents and near misses relating to confined space entry.

B. Supervisors or designee shall be responsible for the following:

1. Ensure that each employee participating in confined space entry has the required training.

2. Ensure that employees perform work in compliance with this procedure.

3. Ensure employees have obtained a Confined Space JHA from Risk Management.

4. Verify the confined space entry permit and procedure is completed prior to permit-required confined space entry.

5. Monitor and enforce employee compliance with this program during job operations.

6. Evaluate the work location periodically for any change in hazards that may require a modification to this procedure.

7. Notify employees of new and existing hazards in the workplace and provide the appropriate PPE and equipment for those hazards.

8. Ensure that all equipment and PPE required by this procedure is available to employees always.

C. All OC San staff, service vendors, and contractors must:

1. Follow all confined space program policies and related safety procedures.

2. Only work adjacent to or within a confined space where trained and in accordance with this program.

3. Immediately report unsafe conditions to the Attendant or Entry Supervisor, and Entrants shall either not enter the space or evacuate the space until the concern is addressed.

4. Immediately report near misses and incidents to supervision.

5. Never perform a confined space entry where workers cannot be protected from hazards.

D. Entry Supervisor

The Entry Supervisor does not have to be an employee working in the supervisor position classification. This person may be a lead worker or an experienced employee in any job classification approved for confined space entry. Duties of the Entry Supervisor include, but are not limited to the following:

1. Shall be competent to oversee and direct confined space entry and associated operations in accordance with this program, and entry work permits.

2. Shall verify that the confined space entry permit is accurate, and that all tests, requirements, procedures, and equipment specified on the permit have been satisfied or are in place before issuing the permit to authorize entry.

3. Shall remain at the confined space to control operations unless relieved by another competent, qualified, and authorized Entry Supervisor. The leaving Entry Supervisor should inform the replacement Entry Supervisor of current confined space personnel involved. The replacement Entry Supervisor shall be added to the permit.

4. Shall conduct a pre-entry safety meeting with all persons involved prior to the start of the confined space operations.

5. Shall coordinate activities where multiple employers are working on the same job or on nearby jobs that might affect confined space operations.

6. Shall terminate the entry and cancel the permit if permit requirements are no longer met, or if hazardous conditions inside or outside the space arise that were not anticipated.

7. Shall be able to recognize the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

8. Shall identify appropriate rescue methods, verify methods for alerting Rescuers and verify that Rescuers are available for a timely response.

9. Shall verify acceptable entry conditions are met and that they remain constant with requirements of the entry permit, including whenever changes occur inside or outside the space.

10. Shall ensure that access to the confined space is prohibited when work is not in progress and there are no Attendants present or emergency response is not available.

11. Shall ensure that areas are barricaded, cordoned off, or otherwise protected to prevent exposure to hazardous atmospheres where gases, vapors or inert gas is vented.

12. Shall ensure that rescue service is qualified to act in the capacity of rescue.

13. May be designated on the entry permit as an Attendant or Entrant and shall be qualified to perform atmospheric testing and selection of ventilation systems.

14. Shall be trained and/or qualified with the respective requirements for each position.

E. Authorized Entrants

Duties of an Authorized Entrant include, but are not limited to the following:

1. Shall be competent, qualified, and authorized to enter and working within a confined space.

2. Shall enter the confined space only when designated by the employer and authorized by the Entry Supervisor and only after a pre-entry evaluation has been performed and the permit is issued (if necessary).

3. Shall know the hazards that may be encountered during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

4. Shall be informed of known and potential hazards within the space prior to entry.

5. Shall demonstrate the proper use of approved equipment, tools, and materials, including, but not limited to personal protective equipment, respiratory protection, non-entry rescue devices, instruments, and decontamination materials.

6. Shall review the pre-entry atmospheric testing results to validate the confined space is safe to enter.

7. Shall communicate or alert the Attendant when the Entrant recognizes any warning sign or symptom of exposure, detects a prohibited condition or so that the Attendant may monitor the Entrant's status to initiate evacuation from the space.

8. Shall exit from the space as quickly as possible when ordered by the Attendant or Entry Supervisor, when the Entrant recognizes any warning sign or symptom of exposure, an evacuation alarm is activated, or a dangerous situation exists.

F. Authorized Attendant

Duties of an authorized Attendant include, but are not limited to the following:

1. Shall be competent, qualified, and authorized for planned confined space work.

2. Shall demonstrate the proper use of assigned equipment, including, but not limited to personal protective equipment, respiratory protection, non-entry rescue devices, tools, and communication devices, and be able to demonstrate such competency to the Entry Supervisor.

3. Shall understand and be able to communicate to the Entry Supervisor the hazards inside and outside the specific confined space that might occur during entry, including the modes, signs or symptoms, and consequences of exposure to Entrants.

4. Shall constantly observed, monitor, and evaluate the conditions in and around the confined space to ensure that compliance with the requirements of the permit is maintained throughout entry.

5. Shall monitor adjacent areas outside the confined space for changing conditions that might affect safe entry work.

6. Shall remain stationed outside confined space opening during entry operations until relieved by another assigned Attendant. The leaving Attendant should inform the replacement Attendant of current confined space entry and Entrant status. The replacement Attendant shall be added to the permit. The Entrant shall be notified of the transfer of duties.

7. Shall monitor Entrant status and direct Entrant evacuation as needed.

8. Shall continuously maintain an accurate count of Entrants in the confined space.

9. Shall take the following actions when unauthorized person(s) approach or enter a confined space while entry is underway:

a. Warn nonauthorized personnel not to enter the confined space.
b. Inform Entrants and Entry Supervisor when nonauthorized personnel enter or attempt to enter.
c. Prevent nonauthorized personnel from interfering with Attendant duties.

10. Shall summon rescue and other emergency services immediately upon recognizing that an Entrant's distress inside the confined space.

11. Shall perform non-entry rescue as trained and equipped.

12. Shall summon rescue services as soon as it is determined that the authorized Entrant(s) may need assistance to escape from hazards present in the confined space.

13. Shall never perform an entry rescue, except where trained and equipped and duties of Attendant are reassigned to another trained employee.

Attendants may perform other assigned duties that do not interfere with the primary duty to monitor and protect Entrants, or where competent and qualified, such as testing external atmosphere, summoning Rescuers, and performing non-entry rescue. The Attendant may monitor more than one confined space if they can track and identify the authorized Entrants entering the spaces.

G. Rescuers

Rescuers may include trained OC San staff, third-party rescue services, or contractor rescue teams. OC San staff will not provide rescue services to contractors. Local emergency medical services (i.e., Fire Department) shall not be relied on as a confined space rescuer, however, these services shall be summoned in the event of a confined space rescue to provide medical services to Entrants once rescued from the confined space.

Rescuer responsibilities include, but are not limited to the following:

1. Shall be competent, trained and equipped as required by the confined space entry.

2. Shall be designated and able to respond to emergencies the require the rescue of the Entrants from outside or from within the space.

3. Shall be available and always on alert for prompt rescue or notify the Entry Supervisor if rescue services become unavailable.

4. Be familiar with personal protective equipment and rescue necessary for making rescues.

5. Use PPE and rescue equipment necessary for making rescues from confined spaces.

6. At least one member of the Rescue Team shall be certified in basic first aid and cardiopulmonary resuscitation (CPR).

7. Shall be trained to perform assigned rescue duties, including training as an Authorized Entrant.

8. Shall be informed of hazards adjacent to and within the space when called to perform rescue, including development of appropriate rescue plans.

9. Practice making rescues once every 12 months for permit spaces, by means of simulated rescue operations in which they remove dummies, mannequins or people from actual permit spaces or representative permit spaces.

10. Shall attempt to rescue using non-entry methods, except where it was determined by the entry team that use of such retrieval systems would increase the overall risk of entry or would not contribute to the rescue of the Entrant, and as such entry rescue is required.

H. Contractor

Contractors' requirements include, but are not limited to the following:

1. Shall have a written confined space program in accordance with CALOSHA Construction Safety Orders. The contractor's confined space program shall not conflict with and may be used to supplement OC San's confined space program, whichever is more stringent.

2. Shall identify and designate those individuals who are educated, trained, competent and/or qualified to perform specific confined space-related duties, including but not limited to, Entry Supervisors, Attendants, Entrants, hazard identification and controls, entering confined spaces, conducting atmospheric monitoring, providing for rescue, and ventilation. Confined space responsibilities shall be listed on the entry procedure and/or permit.

3. Shall participate in a pre-job safety meeting with OC San to establish assignments and responsibilities associated with the confined space entry.

4. Submit for review their employee's training records and their work-specific confined space entry procedures to the Risk Management Division for review at least five days before the job start.

5. Shall not perform any work in a confined space until a Confined Space JHA is completed by OC San's Risk Management Division. Contractor shall submit proof of training, a copy of the contractor's written confined space program, entry procedures, rescue, and ventilation plan (where required), hazardous energy control procedures (LOTO), safety data sheets, and any other required documentation for confined space entry.

6. Shall review and evaluate the confined space to be entered, identify actual and potential hazards, and determine appropriate measures to eliminate or control hazards.

7. Shall implement effective measures to prevent personnel from entering the confined space (unless they are designated as Entrants or when the space is not occupied).

8. Shall provide required equipment for entry and ensure that it is properly inspected, tested, maintained, and used in accordance with manufacturer's instructions and applicable safety programs.

9. Ventilation plans shall be prepared by a Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH), or Professional Engineer (PE), where required by this program.

10. Shall identify, evaluate, and qualify assigned Rescuers or outside emergency services and develop and implement procedures for summoning rescue.

11. Shall evacuate Entrants upon discovery of unanticipated hazards outside or inside the confined space.

12. Shall certify that employee training, education or qualification has been completed.

13. Shall review safety issues and report any near misses or incidents sustained during confined space entry with OC San.

14. Shall request clarification on this written program and/or the current confined space inventory list, particularly for issues which may impact a contractor's proposed fee, work method, safety procedures, or schedule for any project. Clarification must be submitted in writing as a bidder question to OC San for a response prior to bidding a construction project. Once selected for work, interpretation of this program can be provided upon request.

15. When a contractor employs a subcontractor for work that involves a confined space entry, the contractor shall provide the subcontractor with a copy of this program. The primary contractor is responsible for verifying that their subcontractors are maintaining compliance with this program.

VI. Confined Space Types

A. Confined Space Definition

For a space to be considered a confined space, the space must exhibit all three of the following conditions:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work. *The space shall be large enough that a person can physically enter and perform work. Entry begins as soon as any part of the body breaks the plane of the entry portal.*

2. Has limited or restricted means for entry or exit. *Limited or restricted includes use of ladders to access or if a worker is required to crawl or contort their body to enter or exit. Travel distance to an exit could also be considered to have limited means of exit.*

3. Is not designed for continuous employee occupancy. *This is a space where an employee is not normally assigned for work. The space can be considered for employee occupancy when it is designed or redesigned with ventilation, lighting, sufficient room to accomplish anticipated tasks, etc.*

All confined spaces are classified as a Permit-Required Confined Space until the space is tested and/or evaluated to determine if the space may be reclassified for entry as a non-permit confined space or using alternative entry procedures. Reclassification must be approved by OC San Risk Management. Structures that are under construction and meeting the definition of a

confined space will be classified as a permit-required confined space until evaluated for potential reclassification.

B. Permit-Required Confined Space

A permit-required confined space (permit space) is a confined space that contains one or more of the following characteristics:

1. Contains or has the potential to contain a hazardous atmosphere,

2. Contains a material that has the potential for engulfing an Entrant,

3. Has an internal configuration such that an Entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section, or

4. Contains any other recognized serious safety or health hazard.

A permit space may be entered using alternative entry procedures provided that:

1. It can be demonstrated that the only hazard posted by the permit space is an actual or potential hazardous atmosphere,

2. Forced air ventilation alone is sufficient to maintain the permit space safe for entry, and

3. Monitoring and inspection data is provided to support removal of the hazardous atmosphere through ventilation. Safety and health hazards must be eliminated prior to entry. If entry is required to eliminate or control the hazards, then entry must first be performed under permit space requirements. Refer to Section XIII, Reclassification of a Permit-Required Confined Space for additional information.

C. Non-Permit Confined Space

A non-permit confined space is a confined space shall have the following characteristics:

1. Does not contain or have the potential to contain a hazardous atmosphere capable of causing death or serious physical harm. *Only atmospheric monitoring can confirm the absence of a hazardous atmosphere. Atmospheric monitoring must be performed in the confined space prior to and during the entry. Non-permit confined space status cannot be achieved through use of forced air ventilation (see alternative entry procedures for ventilation of spaces).*

2. Recognized serious safety and health hazards (i.e., chemical, mechanical, electrical, engulfment, etc.) are eliminated or controlled within the space and entry is not required for such elimination. *The space may be classified as a non-permit confined space for as long as the hazards remain eliminated or controlled. If hazards arise within the space, Entrants shall exit the space and the space shall be reevaluated.*

3. Does not contain an internal configuration such that an Entrant can be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.

4. Work activities performed in the non-permit confined space shall not introduce any new hazards which could cause death or serious physical harm (i.e., toxic atmospheres or asphyxiation from welding, torch cutting, use of solvents, or gas purging). *Work activities must be evaluated prior to entry. Work activities capable of causing death or serious physical harm, the space must be reclassified as a permit-required confined space.*

VII. Confined Space Identification and Evaluation

Confined spaces located at OC San's treatment plants and pump stations have been identified and documented as part of this confined space entry program. Inventoried confined spaces have been evaluated for anticipated hazards according to the intended service or use of the space.

It is important to note that the inventory of confined spaces does not account for the additional hazards introduced outside or inside the space because of construction and/or maintenance-related activities. As such, the confined space must be further evaluated to determine if reclassification is necessary. This supplemental evaluation is completed by Risk Management using the Confined Space Job Hazard Analysis (JHA). Refer to the Confined Space JHA section for additional information.

The inventory of confined spaces includes the following information:

1. Name of building or area where confined space is located.
2. Geographic Information System (GIS) identification number.
3. Location and description of the space.
4. Size, access, and design of the space.
5. Potential or anticipated atmospheric hazards, including oxygen deficiency or enrichment, flammable atmosphere, hydrogen sulfide, dust or mist, and gas or vapor.
6. Potential for engulfment (including wastewater flooding).
7. Configuration.
8. Other recognized safety hazards (i.e., mechanical, pressure, electrical, heat or cold, chemical).
9. Potential for classification as a non-permit confined space provided elimination or isolation of hazards is effective and verified.
10. Presence of labels.
11. Availability of entry procedures.
12. Latitude, longitude, and elevation of the entry point.
13. Additional comments about the space.

The latest version of the inventory is maintained on the Risk Management page of the San Box (intranet site). Risk Management updates the inventory as new spaces are added or existing spaces are modified to change the original classification. The original classification may only be changed based on review of cancelled permits, results of atmospheric monitoring and near miss or incident investigation reports, or if the space has been modified so it does not meet the definition of a confined space. Reclassification is temporary and must be determined on a project-by-project basis.

Sewer systems located throughout the OC San service area are subject to special entry requirements. As such, the collection systems have not been included on the confined space inventory, must be evaluated prior to entry and subject to the requirements of Section XIV for Live Sewer System Entry.

VIII. Confined Space Job Hazard Analysis (JHA)

The Confined Space JHA is completed by Risk Management to perform a supplemental task-based hazard assessment for permit-required confined spaces requiring entry for construction and/or maintenance-related activities. The Confined Space JHA evaluates inherent, introduced, and adjacent hazards to the confined space for the requisition of engineering and administrative controls, as well as the potential reclassification of the confined space from its original intended service or use classification.

The Confined Space JHA includes the following information:

1. Name and contract information for Contractor or OC San staff requesting the evaluation.
2. Location of confined space.
3. Initial confined space classification based on intended service or use (pre-work) as listed on the confined space inventory.
4. Description of work to be performed in the confined space, including estimated completion date.
5. Identification of inherent, introduced, and adjacent hazards.
6. Minimum mitigation controls required prior to entry, including personal protective equipment and other equipment required for safe entry.
7. Assignment of confined space classification based on work to be performed.
8. Review of work plans, including confined space entry permits, ventilation plan, job safety analysis (JSA), rescue plan, lockout/tagout procedures, hot work permits, energized electrical permits, fall plan and safety data sheets (where necessary).
9. Required policies and training.

IX. Confined Space Entry Permit

The OC San confined space entry permit (entry permit) is a standardized document used by OC San in the performance of a permit-required confined space entry. Contractors may use the OC San entry permit, or an equivalent form approved by OC San. The OC San entry permit can be downloaded from Risk Management's SharePoint site.

A. General

The entry permit must be completed and signed by the Entry Supervisor to authorize entry. The Entry Supervisor shall verify that appropriate hazard assessments and atmospheric testing are performed, and safeguards are in place prior to and throughout entry.

An entry permit is the document which allows and controls entry into a permit required confined space. The entry permit must include the following items:

1. The permit space to be entered.

2. The purpose of the entry.

3. The date and the authorized duration of the entry permit.

4. The Authorized Entrants within the permit space, by name or by such other means as will enable the Attendant to determine quickly and accurately, for the duration of the permit, which Authorized Entrants are inside the permit space.

5. Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working.

6. Each person, by name, currently serving as an Attendant.

7. The individual, by name, currently serving as Entry Supervisor, and the signature or initials of each Entry Supervisor who authorizes entry.

8. The hazards of the permit space to be entered.

9. The measures used to isolate the permit space and to eliminate or control permit space hazards before entry.

10. The acceptable entry conditions.

11. The results of air monitoring performed, accompanied by the names or initials of the testers and by an indication of when the tests were performed.

12. The rescue and emergency services that can be summoned and the means (such as equipment to use and numbers to call) for summoning those services.

13. The communication procedures used by Authorized Entrants and Attendants to maintain contact during the entry.

14. Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment.

15. Any other information necessary, given the circumstances of the confined space, to ensure employee safety.

16. Any additional permits that have been issued to authorize work in the permit space (i.e., hot work, energized electrical permit).

The entry permit must be made available to all Authorized Entrants at the time of entry. The entry permit shall be posted at the confined space entrance or by any other equally effective means, so that the Entrant can confirm that pre-entry preparations have been completed.

Entry permits shall not exceed the time required to complete an assigned task or one work shift, whichever is less. If the work activity exceeds one shift or work is completed over multiple days, a new entry permit shall be generated and issued.

The entry permit shall be posted at the confined space during entry operations for inspection by employees. Any problems encountered during entry are noted by the Entry Supervisor on the permit.

B. Canceled Permits

The Entry Supervisor shall cancel a permit upon completion of work, at the end of the shift, or when a condition not allowed under the entry permit arises in or near the permit space and that condition is not covered by alternate entry procedures, whichever occurs first. If the prohibited condition is temporary in nature and does not change the configuration of the space or create any new hazards within it, the Entry Supervisor has the option to suspend the entry permit instead of canceling it, to fully reassess the space before allowing reentry.

The canceled entry permits must be submitted to the respected Division's Supervisor or designee to ensure the permit was completed properly and any corrective actions are implemented before another confined space entry can occur. If the entry permit was completed by the Division Supervisor, the entry permit shall be submitted to the Division Manager for review. Once the entry permit has been reviewed, the canceled permit shall be retained by OC San for at least four years.

Contractors shall submit the cancelled confined entry permits to the assigned OC San Resident Engineer. Copies of the cancelled confined space entry permits will be retained on the project files.

Risk Management will review cancelled confined space entry permits annually. After each review, the program will be revised as deemed necessary. For more information on OC San review process, see Section XIX for Program Administration.

If an unanticipated hazard arises during any part of the confined space entry, the space will be immediately vacated. The Entry Supervisor shall reevaluate the hazards and implement additional engineering and/or administrative controls to render the space safe prior to reentry. If the Entry Supervisor cancels the entry permit due to the inability to mitigate or control the unanticipated hazard(s), then the Entry Supervisor shall document on the canceled permit the reason for the cancellation.

X. Hazard Mitigation

Entry Supervisors should ensure that all identified inherent, introduced, or adjacent hazards in and around the confined space are eliminated, mitigated, or controlled to extent possible. Hazards that cannot be controlled shall be listed on the permit by the Entry Supervisor, who should then make sure that the required personal protective equipment is used, or other measures are taken to ensure safe entry. Hazard control steps include but are not limited to the following:

A. Control of Hazardous Energy (LOTO)

All sources of hazardous energy (i.e., electrical, mechanical, chemical, hydraulic, pneumatic, thermal, stored energy) that can impact worker safety must be controlled prior to entry into a confined space. The energy sources shall be controlled in accordance with the OC San Control of Hazardous Energy (LOTO) Program (SOP-605).

Prior to entry, an energy control procedure (ECP) must be generated by the Division who will be making the energy isolations. The entry team, which includes Attendants, Entrants and the Entry Supervisor will apply personal locks in accordance with SOP-605. The control of

hazardous energy must be verified prior to entry. The ECP must be posted at the confined space with the Confined Space JHA and entry permit.

Pipes and lines (i.e., chemical, air, hydraulic, electrical) located in the confined space with the potential for materials to enter (i.e., leak or as part of normal operation) into the space shall be disconnected and drained, blinded, double blocked, bled, flushed, purged, or otherwise isolated prior to entry.

Pipes and lines that run through a confined space that will be worked on as part of the entry need to be disconnected and drained, blanked, bled, flushed, purged, or isolated as needed before work begins. The disconnection or blind shall be so located or done in such a manner that inadvertent reconnection of the line or removal of the blind are effectively prevented.

Pipes and lines that run through the confined space but do not terminate within the space do not need to be disconnected or isolated if it is determined by the Entry Supervisor to not impact the work performed and does not create a hazard to workers in the space.

If it is necessary for any equipment to continue operation to perform work in the space, the Entry Supervisor shall ensure that the work is performed using approved alternative methods or that the control measures provide effective protection to workers in the space.

B. Ventilation

Ventilation can be used to supply breathing quality air, remove, or control atmospheric hazards, and/or control temperature for comfort. Comfort ventilation is used where heat or cold stress may be an issue and must be assessed by the Entry Supervisor. Ventilation is primarily used to establish initial safe entry conditions or maintain the safe entry condition throughout the duration of the confined space entry. Ventilation can be completed using natural or mechanical methods. The effectiveness of ventilation will be verified using gas detection equipment.

Ventilation systems must be designed by a competent person. The ventilation system must consider volume and configuration of the space, capacity of the air-moving device(s), and nature of the hazardous atmosphere. A ventilation plan must be developed where ventilation is used to control a hazardous atmosphere. See Section XVI for more information regarding a Ventilation Plan.

1. Natural Ventilation

Natural ventilation is when breathing quality air from outside the space mixes with air inside the space, generally though natural pressure differentials without mechanical assistance. Natural ventilation shall only be used when a documented hazard evaluation and risk assessment demonstrates that adequate mixing will occur.

If natural ventilation is solely relied on to provide breathing quality air, atmospheric monitoring within the space must be continuous throughout the entry. Natural ventilation is a cost-effective method, but it must not be relied upon to ensure stable atmospheric conditions. Internal configurations and physical properties of the hazardous atmosphere can interfere or impede air circulation.

Generally, natural ventilation is adequate for shallow open pits which are entered under alternate entry procedures. Open pits (i.e., drained basin or valve vault) with all hazards controlled and having an expansive open roof along the entire footprint of the structure should receive adequate natural ventilation for construction or maintenance work that does not generate significant dust, fumes, or vapors. Portable ventilation equipment should be used as needed during activities such as welding, grinding, or coating which generate dusts, fumes, or vapors.

2. Mechanical Ventilation

Mechanical ventilation involves using one or more powered air moving devices (i.e., fan, blower) to either push or pull air into the confined space to create a slight vacuum that allows breathing quality air to enter and circulate the space. In some cases, both a push and pull ventilation system working in tandem may be necessary to effectively control the level of contaminants.

Ventilation equipment can generate and accumulate static electric charges. The Entry Supervisor must verify that the equipment used is properly bonded and/or grounded whenever a flammable or combustible contaminant exists within the space.

Ventilation equipment must be intrinsically safe when used to remove flammable, toxic, or combustible gas and vapors. Exhaust ventilation used to control flammable and combustible atmospheres should be positioned at a height above ground level to provide for proper dissipation. Verification that sources of ignition or personnel in path (downwind) of hazardous exhaust shall be conducted. Entrants will not be allowed to enter a permit required confined space until atmospheric monitoring verifies that ventilation alone has eliminated any hazardous atmospheric conditions inside the confined space.

Atmospheric conditions within the confined space shall be continuously monitored by a properly calibrated direct reading atmospheric monitor to ensure that the continuous forced air ventilation is preventing the accumulation of hazardous atmosphere. Bends and kinks shall be avoided in the ventilation ducting.

Based on the volume of the confined space, capacity of air-moving devices and nature of the hazardous atmosphere within the space, the required time for ventilation and air changes necessary to ensure stable atmosphere shall be determined. Entry shall not be permitted until the space has been completely ventilated. All live sewers shall have and maintain forced air ventilation prior to and during confined space entry.

Mechanical ventilation can be achieved using the following methods:

a. General (Dilution) Ventilation

Uncontaminated breathing air can be supplied, removed or a combination of both using powered air-moving devices. Air being supplied into the confined space must be from an outside uncontaminated air source. Depending on the size and configuration of the space and air devices used, ducting may be necessary to direct the air supply. This method dilutes the air in the space with uncontaminated air. When removing air from the space, the air-moving device shall be oriented so that the air is pulled from within the confined space to create a vacuum which allows for outside uncontaminated air to enter the space. A push and pull method can be used to increase the rate of dilution. Ventilation shall be set up to avoid short circuiting and dead zones.

b. Local Exhaust Ventilation

Local exhaust ventilation is used to capture and collect localized or locally created (i.e., welding or painting) atmospheric contaminants. The local exhaust ventilation is generally used for specific work activities or for chemical residues remaining in the space to limit the release of contaminants and prevent further contamination within the space. This ventilation method is only effective when it is located and maintained as closed as reasonably possible to the source.

C. Cleaning and Purging

Cleaning or purging might be required to remove chemical or atmospheric hazards from within the space. Cleaning and purging can only be performed after the process materials or chemicals have been removed from the pipe or space. Cleaning shall be performed to the extent possible from outside the space without need for entry. Cleaning may involve hosing or the pressure washing of surfaces.

Purging generally will be performing with an inert gas or water. Steam is not permitted for purging flammable atmospheres due to a possible result in fire or explosion. If the hazard cannot be removed through purging, then additional controls will need to be implemented.

Even after cleaning, harmful residues may remain in the confined space. Safety data sheets shall be reviewed to determine if residues are harmful to Entrants by inhalation or absorption in the skin.

Purging with an inert gas is used to control ignition hazards in a confined space by displacing the oxygen in the atmosphere with the inert gas. If entry is required after inerting, the confined space shall be purged with water or ventilated with breathing quality air, and the atmosphere tested to verity acceptable entry conditions. Whenever a confined space is purged, discharge points of evacuated ignitable atmospheres shall be considered. The confined space shall be labeled with signage remarking the lack of oxygen when an inert gas is used as a purge method.

Entry into an inert atmosphere should not occur except under well controlled situations where no other option for entry is available. If entry into an inert atmosphere is required, a combination full face-pressure demand supplied air respirator with auxiliary self-contained breathing apparatus (SCBA) escape mechanism shall be provided to Entrants. Leakage or exhaust of breathing quality air into the inert atmosphere may create a hazard by reducing the effectiveness of the inert concentration and increasing oxygen levels.

D. Area Secured and Marked

When standard covers are removed for purposes of confined space entry, approved fall protection systems shall be installed. Fall protection systems may include a controlled access zone, fall restraint, or arrest system, or guardrails. The fall protection systems shall be installed, maintained, and inspected according to the OC San Elevated Work and Fall Protection Program (SOP-626).

When covers are removed, signs or labels shall be posted at the entrance to the confined space. The signs or labels shall notify the person that unauthorized entry is prohibited and that a danger exists in the space. A sign reading “DANGER -- PERMIT-REQUIRED CONFINED

SPACE, DO NOT ENTER" or using other similar language would satisfy the requirement for a sign.

Walking and working surfaces located in and adjacent to the confined space shall be clean and free of trip hazards to the extent possible. Trip hazards that cannot be controlled shall be flagged or marked. Hoses, tubing, ducting, cords, etc. that are brought into the confined space shall be setup and secured to minimize trip hazards.

E. Approved Illumination

Only approved lighting can be used inside a confined space. Lighting shall consider flammable or combustible liquids, vapors, or gases in the space. Lighting may be in the form of headlamps, portable lighting, flashlights, or other approved equipment.

F. Animals and Insects

The confined space shall be visually inspected prior to entry, and any potentially dangerous animal or insect removed or eliminated. If extermination chemicals are used, hazardous atmosphere and dermal hazards shall be evaluated prior to entry.

G. Energized Electrical Work

Entry into a confined space with exposed energized electrical equipment must be performed by a qualified person in accordance with the OC San Electrical Safety Program (SOP-205). Any work performed on the energized equipment or where the Entrant is within the arc flash boundary shall be completed under an energized electrical work permit.

H. Hot Work Permit

When hot work is required in or adjacent to a confined space, the Entry Supervisor shall obtain a hot work permit from Risk Management. Where possible, cold work options shall be evaluated during entry. Cold work options may include mechanical cutting, cold cutting, scraping, hand grinding, and filing with equipment that minimizes the potential for sparks and heat. For example, cutting with hand saws, hydraulic shears, pneumatic chisels, or pipe cutters. Mechanical joining can be achieved by using nuts and bolts, screwed fittings, or couplings. Even though sparks may be generated by some of the cold work operations the risk is generally lower since they are typically not hot enough to cause ignition.

Grounding and bonding requirements shall be evaluated for equipment used in the confined space. For example, ventilation and cleaning operations could generate an electrostatic charge. Hot work shall be conducted in accordance with the OC San Hot Work Program (SOP-118).

I. Fall Protection

Fall protection shall be provided and maintained for all personnel working in and around the confined space where a fall hazard exists. Fall hazards shall be evaluated and addressed in accordance with the OC San Elevated Work and Fall Protection Program (SOP-626).

During confined space entry, any covers that are removed shall be adequately guarded to prevent falls. If workers need to work around the opening, a restraint system can be used where conventional guardrails are restrictive. Fall arrest systems shall be used for personnel entering

or working from within the confined space. If Entrants are lowered vertically into a confined space, a secondary independent form of protection shall be used.

J. Personal Protective Equipment

PPE shall be selected according to hazards present within the confined space. Required PPE shall be marked on the entry permit. The Entry Supervisor shall be aware of the various levels of protection offered and the suitability of existing PPE.

PPE shall be worn according to Section X – Entry Equipment and Personal Protective Equipment, as well as the OC San Personal Protective Equipment Program (SOP-102). Respiratory protective equipment must be worn in accordance with the OC San Respiratory Protection Program (SOP-109).

K. Equipment and Tools

Intrinsically safe (explosion proof) equipment and non-sparking tools shall be used when performing entries into a confined space that has been identified with a potential flammable or combustible atmosphere.

Entry Supervisor shall ensure that the electrical and mechanical equipment used in a confined space is approved, listed, labeled, and authorized as required for its intended use. All approved equipment that be inspected prior to use to ensure that it is in safe operating condition, including:

- Lighting
- Communication equipment
- Battery-operated tools
- Ventilation equipment and systems
- Portable electric and pneumatic tools
- Welding and cutting equipment
- Mechanical equipment
- Extension cords
- Compressors, pumps, and hoses
- Lifting equipment, including hoists, pulleys, and ropes
- Rescue equipment
- Scaffolding and other aerial equipment, including ladders

Electrical equipment used in a wet or damp location shall be equipped with ground-fault circuit interrupters and inspected by a qualified person prior to use.

L. Traffic Control

Protection from vehicle and pedestrian traffic hazards, both in the plants and in the collection system, can be provided using effective traffic control plans. Traffic control devices can control the hazards posed by vehicular traffic, but they cannot eliminate them. It is important to pre-plan the work site for traffic control device placement and use work vehicles and natural barriers as protective devices to the fullest extent possible.

M. Mechanical Lifting Devices and Lines

Appropriate retrieval equipment or methods must be used if a person must be lifted out of a confined space that is at depths greater than or equal to five feet. A qualified person must determine what rescue equipment will be needed to ensure a safe and prompt rescue, the proper type and availability of the equipment if retrieval lines are used.

If vertical extraction is required, then a tripod or other lifting device must be set up at the time of entry. Mechanical lifting devices must be installed and used in compliance with the manufacturer's installation and operation procedures.

Mechanical devices must be certified by a nationally recognized testing laboratory for such use. A tripod or davit arm system must be capable of supporting all imposed loads within the design limits set by the manufacturer or be designed with a 4:1 safety factor. Lifelines must have a breaking strength of 5,000 pounds or with a 2:1 safety factor. The mechanical device must have a manual cranking system and be operable by one person in additional to any power system. The mechanical device must have a primary and secondary braking system. All lifting devices must be marked with their rated load capacity and maximum cable length.

XI. Confined Space Notification and Prevention of Unauthorized Entry

OC San has similar, recognizable, or multiple confined spaces located throughout the treatment plants and pump stations. To provide a safe work environment and to prevent accidental entry of a permit space, OC San enacts the following methods to inform OC San staff, contractors and the public regarding the existence and danger posed by confined spaces at the OC San facilities:

1. Facility signage is posted at all entrances to the treatment plants. The facility signage posted at all entrances state: "DANGER – THIS FACILITY HAS MULTIPLE PERMIT REQUIRED CONFINED SPACES. DO NOT ENTER WITHOUT AUTHORIZATION".

2. Where feasible, individual signs or labels are posted at the confined space points of access. Individual confined space signs and labels including wording similar to the following: "DANGER – CONFINED SPACE", "DO NOT ENTER WITHOUT AUTHORIZATION".

3. OC San staff working adjacent to or in confined spaces are trained regarding this program, including the confined space inventory.

4. OC San will communicate confined space requirements to Contractors as part of the Job Site Safety Analysis process.

Confined spaces located at the pump stations shall be locked, guarded, protected, or barricaded to protect against unauthorized entry.

Moreover, Entry Supervisors and Attendants have duties to ensure that Entrants are authorized and that unauthorized persons are kept away or removed from permit spaces. See the Roles and Responsibilities section of this program for details.

XII. Entry Procedures

A. Pre-Entry Operation Procedures

The following actions are completed (as necessary) prior to entry:

1. The written confined space program is made available for inspection by employees.

2. Obtain Confined Space JHA for permit-required confined spaces from Risk Management.

3. Develop a confined space entry procedure.

4. The permit space is isolated and physical hazards within the space are eliminated or isolated in accordance with OC San Control of Hazardous Energy Program (SOP-605). This includes obtaining or developed an energy control procedure.

5. Complete a job safety analysis, identify, and evaluate all existing and potential hazards associated with the confined space.

6. Complete an entry permit for the confined space.

7. Entry Supervisor shall verify that rescue services are available, that the means for summoning them is operable, and notification for when these rescue services become unavailable is manageable.

8. All equipment listed in the PPE and equipment section of the permit is provided and maintained near the permit space or otherwise made available to employees. This includes non-entry rescue equipment if non-entry rescue is feasible.

9. Equipment, such as ladders, needed for safe ingress entry into, safe exit from, and rescue from the permit space is provided.

10. Any conditions (e.g., high pressure) that could make it unsafe to remove an entry cover are eliminated.

11. Pedestrian, vehicle, or other barriers necessary to protect Entrants from external hazards are made available and put in place, if possible, at this pre-entry operation stage.

12. If engulfment hazards (e.g., storm drain) cannot be isolated, an early-warning system that continuously monitors non-isolated engulfment hazards is provided that would alert Authorized Entrants and Attendants in sufficient time for the Authorized Entrants to safely exit the space. The early-warning system may be an alarm activated by remote sensors or lookouts with equipment for immediate communication with the Authorized Entrants and Attendants.

13. If atmospheric monitoring is done from outside the confined space, initial testing should be performed with all ventilation controls turned off to ensure testing of a static atmosphere and to determine the background gas concentration levels in the even that ventilation fails during entry.

14. If atmospheric hazards are eliminated or controlled by purging, cleaning, or ventilating the permit space, then the space shall be retested for acceptable entry conditions.

15. If isolation of the space is infeasible because the space is large or is part of a continuous system (e.g., live sewer), then pre-entry testing is performed to the extent feasible.

16. Each Authorized Entrant must be provided the opportunity to observe any testing of the permit spaces. Each Authorized Entrant must immediately be provided with the result of any testing conducted. Testing results must be recorded on the entry permit.

17. The permit space must be reevaluated in the presence of any Authorized Entrant who request that such a reevaluation be conducted when there is some indication that the evaluation of that space may not have been adequate.

18. If it is not possible to reduce the atmosphere below 10% LEL with ventilation, then the permit space shall be purged with an inert gas to render the entire atmosphere in the space non-combustible.

19. If it is not possible to eliminate other hazardous atmospheres in the space, then employees are provided with appropriate and effective PPE to address the atmospheric hazards.

20. Atmospheric hazard monitoring procedures must be reviewed to ensure that if the ventilation system stops working during entry, the procedures are sufficient to detect an increase in atmospheric hazard levels in sufficient time for Entrants to safely exit the permit space. The entry permit will specify the means of detecting an increase in levels.

21. The Entry Supervisor completes entries on the entry permit and ensures that all tests specified by the permit have been conducted and recorded on the permit and that all procedures and equipment specified by the permit are in place.

22. Conditions in the permit space are reviewed by the Entry Supervisor to confirm they are acceptable for entry.

B. Entry Operation Procedures

1. Entry Conditions

Authorized Entrants are only allowed to enter a permit space to perform work specified on an entry permit. The Authorized Entrants may only enter the permit space after all the following conditions are met:

- Pre-entry procedures have been completed.
- Acceptable permit conditions specified on the entry permit are achieved.
- An Attendant is present outside the permit space.
- An Entry Supervisor is present.
- The Entry Supervisor authorizes entry by signing or initialing the entry permit.

Entry Supervisors may serve as an Attendant or Authorized Entrant if the Entry Supervisor is trained for those roles. If only two employees are present, entry may not take place unless

either: (1) an Authorized Entrant and Entry Supervisor (serving as the Attendant) are present, or (2) an Attendant and the Entry Supervisor (serving as the Authorized Entrant) are present.

The Entry Supervisor shall ensure that acceptable entry conditions specified on the permit are maintained throughout entry.

2. Attendant Provision

One Attendant must be positioned outside the permit space where entry is authorized for the duration of the entry. The Attendant may be stationed at any location outside the permit space.

3. Proceeding with Entry

Once the entrance cover is removed, if present, any remaining pedestrian, vehicle, or other barriers necessary to protect Entrants from external hazards shall be immediately put in place. These barriers are specified in the entry permit to prevent an accidental fall through the opening and to protect each employee working in the space from foreign objects entering the space.

4. Hazardous Atmosphere Protections

Employees are not allowed to enter or remain in a space with a hazardous atmosphere unless appropriate PPE is used and will provide effective protection for each employee in the permit space.

Throughout entry operations, the space shall be monitored continuously in areas where Authorized Entrants are working, except that employers may use periodic monitoring if it can be demonstrated that equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient. The monitoring equipment shall be equipped with an alarm that will notify all Entrants if a specified atmospheric threshold is achieved or that an employee will check the monitoring with sufficient frequency to ensure the Entrants have adequate time to escape.

If continuous monitoring is not used, periodic monitoring is required with sufficient frequency to ensure that acceptable entry conditions are being maintained. When monitoring for atmospheric hazards, monitor first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors. Monitoring shall be performed from the outside of the space. All levels and areas of the space shall be tested initially.

Each Authorized Entrant or his or her authorized representative is provided the opportunity to observe any testing or monitoring of permit spaces and is immediately provided with the monitoring results. Monitoring results are also recorded on the entry permit. The permit space is reevaluated in the presence of any Authorized Entrant or that employee's authorized representative who requests that such a reevaluation be conducted if there is some indication that the evaluation of that space may not have been adequate.

5. Engulfment Hazard Protection

If engulfment hazards cannot be isolated, an early-warning system with a mechanism for continuous monitoring shall be provided to alert Authorized Entrants and Attendants with

sufficient time for the Authorized Entrants to safely exit the space. Early-warning systems may include alarms that activate by remote sensors, or lookouts with communication devices to notify Entrants and Attendants. Entrants must evacuate the space as soon as the early-warning system detects a potential engulfment hazard.

6. Conditions for Prompt Evacuation

If any of the following conditions occur during entry operations, Entrants must evacuate the permit space:

- An order to evacuate is given by the Attendant or the Entry Supervisor.
- There is a warning sign or symptom of exposure to a dangerous situation.
- An injury or illness occurs during entry.
- An evacuation alarm is activated.
- The Entrant detects a prohibited condition.
- There is a change in the use or configuration of the permit space.
- A permit space hazard not covered by the permit is detected.
- An unauthorized person enters the permit space.
- The designated rescue service or emergency service becomes unavailable.
- The duration specified on the entry permit is about to expire.

Prohibited condition means any condition in or near a permit space that is not allowed by the permit during the period when entry is authorized. A hazardous atmosphere is a prohibited condition it can be demonstrated that personal protective equipment (PPE) will provide effective protection for each employee in the permit space, and we provide the appropriate PPE to each employee.

C. Suspended Entry Operation Procedures

If a prohibited condition is temporary in nature and does not change the configuration of the space or create any new hazards within it, the Entry Supervisor has the option to suspend the entry permit instead of canceling it. Suspension of the permit allows the Entry Supervisor to fully reassess the space before allowing re-entry.

D. Post-Entry Operation Procedures

After entry operations covered by an entry permit have been completed with or without incident, and all Authorized Entrants have exited the permit space:

- The Entry Supervisor will ensure the permit space portal is closed off properly.
- The Entry Supervisor terminates entry and cancels the entry permit.
- The Entry Supervisor will note on the entry permit any problems encountered during an entry operation so that appropriate revisions to the confined space entry program can be made.
- Contractors shall provide copies of the entry permit to OC San to be retained for at least one year to facilitate review of the confined space entry program.

XIII. Reclassification of a Permit-Required Confined Space

Alternative entry procedures must be approved by Risk Management.

A. Conditions for Alternate Entry

Permit-required confined spaces may be entered with alternate entry conditions provided that the following can be demonstrated:

- All physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
- Continuous forced air ventilation alone is sufficient to maintain the space safe for entry.
- The monitoring and inspection data is developed to demonstrate that the only hazard posed is an atmospheric hazard, which alone can be controlled by forced air ventilation. *Note: If initial entry of the permit space is necessary to obtain the data, the entry must be performed under permit conditions. Data must be substantial for employer and employees, as well as OSHA, to be able to determine that the space can be maintained safe for entry with use of ventilation alone. Risk Management must approve monitoring and inspection data. Contractor CIH or CSP must submit written approval for entry under alternate entry procedures.*

The determinations and supporting data required above are documented and available to each employee who enters the permit space under the specific alternate entry procedures. Entry into the permit space is performed in accordance with the alternate entry procedures listed below.

If ventilation shuts down for any reason (e.g., loss of power), Entrants must have enough time to recognize the hazard and exit the space or restore ventilation. Work within the space must not introduce any new hazards, such as working with flammable or toxic substances, hot work, etc.

The confined space inventory contains permit spaces currently identified at OC San, including location, hazards based on intended service or use, atmospheric hazards for monitoring, and whether it is possible for the space to meet alternate entry criteria. Only those spaces that are listed as such will be allowed for entry under the alternate entry procedures. A space that is designated only as a permit-required confined space is not eligible for reclassification unless if the space can be modified so that it would no longer be classified as a confined space.

B. Alternate Entry Certification

Prior to any alternate entry operation, the Entry Supervisor shall verify that the space is safe for entry and that the pre-entry measures within the specific alternate entry procedures listed below have been taken. This person then certifies his or her verification in writing. The written certification contains the date, the location of the space, and his or her signature. The certification is then made available to each employee entering the space. A copy of the certification is maintained with the Confined Space JHA near the confined space entry location.

C. Specific Alternate Entry Procedures

The following specific alternate entry procedures must be followed for entry into the permit space demonstrated and documented to meet the criteria for alternate entry:

- Before an entrance cover is removed, eliminate any conditions making it unsafe to remove an entrance cover.
- When entrance covers are removed, immediately guard the opening by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- Before an employee enters the space, test the internal atmosphere, with a calibrated direct reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order.
- Provide any employee who enters the space an opportunity to observe the pre-entry testing required above.
- Do not permit a hazardous atmosphere within the space whenever any employee is inside the space.
- An employee must not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- Direct the forced air ventilation to ventilate the immediate areas where an employee is or will be present within the space and continue this ventilation until all employees have left the space.
- Ensure the air supply for the forced air ventilation is from a clean source and does not increase the hazards in the space.
- The atmosphere within the space must be continuously monitored. The monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Entrants must have adequate time to escape should a specified atmospheric threshold be triggered.
- If a hazard is detected during entry, each employee must leave the space immediately. The competent person will evaluate the space to determine how the hazard developed, and the Entry Supervisor will implement measures to protect employees from the hazard before any subsequent entry takes place.
- Ensure a safe method of entering and exiting the space.

D. NON-PERMIT CONFINED SPACES

A non-permit confined space is a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Confined spaces identified as non-permit confined spaces must also be evaluated prior to entry to verify that anticipated work activities will not introduce new hazards that could cause death or serious physical harm. The space evaluation will be performed by Risk Management, through completion of the Confined Space JHA. The Entry Supervisor must verify that the hazards have been eliminated prior to entry.

Atmospheric monitoring must be conducted prior to entry to confirm the absence of a hazardous atmosphere. The non-permit confined space checklist must be completed prior to entry and provided for review to all exposed employees.

It is the responsibility of employees entering confined spaces to notify the Entry Supervisor when:

- there are changes in the use or configuration of a non-permit confined space that might increase the hazards to Entrants, or
- there is some indication that the initial evaluation of the space may not have been adequate.

When notified of the situation, the Entry Supervisor must reevaluate the non-permit space, and if necessary, reclassify it as a permit space.

In addition, it is permitted to reclassify a permit space as a non-permit space if the Entry Supervisor determines that requirements have been met for such reclassification. If such is the case, the Entry Supervisor documents the basis for determining that all hazards in a permit space have been eliminated or isolated, through a certification that contains the date, location of the space, and signature of the person making the determination. The certification must be approved by the Risk Management Supervisor. The Entry Supervisor is then responsible for making the certification available to each employee entering the space or that employee's authorized representative.

If hazards arise within a permit space that has been reclassified as a non-permit space, each employee in the space must exit the space, and the Entry Supervisor will notify a competent person at the site, who in turn, reevaluate the space and reclassify it as a permit space as appropriate.

XIV. Live Sewer System Entry

Entry into a live sewer system differs in respect to other confined space entries. Live sewers can rarely be isolated, or the isolation cannot be guaranteed as complete. As such, the atmosphere may suddenly become hazardous from causes beyond control of the Entrant. Employees entering a live sewer system shall be trained and demonstrate knowledge of sewer entry procedures.

The atmosphere within the sewer shall be tested by first placing the atmospheric monitor probe into the pick hole of the manhole cover or by removing the manhole cover back about one inch and placing the probe into the gap.

Ventilation must be established within the sewer to remove present or any potential atmospheric hazard. Live sewers must never be entered without ventilation, except under special conditions approved by OC San Management.

Entrants shall be equipped with a self-contained breathing apparatus (SCBA) or supplied air respirator (SAR) that delivers grade (D) breathing air to the user. Entrants must be equipped with an escape respiratory with at least 10-minute air supply.

Entrants must maintain 100% tie-off (i.e., full body harness, lifeline or rope, mechanical retrieval device) when working inside the live sewer.

Rescuers must be positioned outside the live sewer system. Rescuers must be equipped with a SCBA and retrieval equipment.

Entrants must be trained and equipped with atmospheric monitoring equipment which sounds an audible alarm, in addition to its visual readout. Atmospheric monitoring equipment needs to be calibrated according to the manufacturer's instructions. Substance specific devices should be

used whenever actual contaminants have been identified. The instrument should be carried and used by the Entrant in sewer line work to monitor the atmosphere in the Entrant's environment, and in advance of the Entrants' direction of movement to warn the Entrant of any deterioration in atmospheric conditions. Where several Entrants are working together in the same immediate location one instrument may be used by the Lead Entrant.

Other special equipment is required when working in a live sewer, which can include Tyvek coveralls or fully encapsulating suits, waterproof flashlights, rope, and rafts.

XV. Atmospheric Monitoring

The Confined Space JHA and entry permit shall include recognized and potential atmospheric hazards related to the confined space entry. Atmospheric testing equipment must be selected based on the anticipated hazards. It is impossible to detect a hazardous atmosphere without instruments designed for that purpose. It should never be assumed that a confined space is safe or that an employee will be fine if he or she doesn't stay in a confined space for long periods of time or no dangerous work is performed in the space.

1. Bump Test and Calibration

Monitoring equipment must be bump tested prior to each use. Equipment calibrations shall be performed at manufacturer recommended intervals or if a bump test fails. OC San staff will perform bump tests and calibrations through equipment docking stations.

Testing equipment shall only be maintained by an approved manufacturer or the Instrumentation Division (OC San equipment only). Entry team members must never use instruments which are not properly calibrated. The entry shall be terminated if there is any question concerning the accuracy of the monitoring instrumentation.

2. Equipment Requirements

The direct-reading atmospheric monitors must always be used to determine acceptable entry conditions. The monitors shall meet the following minimum requirements:

- Must be capable of measuring for: %oxygen, %LEL, hydrogen sulfide, and carbon monoxide.
- Must be intrinsically safe (explosion proof).
- Must be splash, heat and shock resistant.
- Must be equipped with audible and visual alarms.
- Must be equipped with an external or internal pump capable of drawing a sample of the existing atmosphere from a depth of 50 feet.

3. Equipment Operation

Atmospheric monitoring must be performed for pre-entry testing and continuous monitoring of the atmosphere within the space. Pre-entry testing involves measuring the atmosphere for all potential hazardous atmospheres identified in the initial hazard evaluation before each entry. Monitoring equipment should be used to determine that the atmospheric conditions are within the range of acceptable entry conditions.

Atmospheric testing performed from outside the space, initially should be performed with all ventilation controls turned off to ensure testing of a static atmosphere and to determine background concentrations if ventilation fails. After initial testing is complete, the atmosphere shall be continuously monitored with the ventilation controls turned on if ventilation is necessary to mitigate the hazard.

Gases and vapors within a confined space can become stratified or layered. Therefore, initial air monitoring must be conducted from outside the confined space starting at top of and every four feet of travel vertically and horizontally into the space. It is recommended that tubing for atmospheric monitoring be marked or labeled at 4-foot intervals.

The depth of the confined space will have an impact on the amount of time necessary to draw a representative sample. Most atmospheric monitors require 2-4 seconds for every foot of tubing before the meter receives a representative atmospheric sample. Depending on the size of the meter and its pump capacity, this sample can take longer. It is up to the end user to reference the manufacturer's data for the time required.

If it is not feasible to conduct the pre-entry atmospheric testing from outside the confined space, then the Entrant shall enter the space wearing either a supplied airline respirator or self-contained breathing apparatus to complete the atmospheric testing.

Once the entire area of the confined space has been checked and atmospheric conditions inside the confined space have been determined to be safe, Entrant(s) may enter the confined space without any respiratory protection if the confined space is continuously monitored by a calibrated direct reading atmospheric monitor.

If it is not feasible to conduct continuous atmospheric monitoring of the confined space from outside the confined space, the Entrant shall wear a direct reading atmospheric monitor when working within the space.

The deployment of multiple portable calibrated direct reading instruments both inside and or outside the confined space is often used to conduct continuous monitoring. The advantage of using mutable meters is that it increases the area being monitored and can be beneficial in that it gives the Attendant the capability to alert the Entrant(s) to a potentially hazardous atmospheric condition before it impacts the area where they are working.

Direct reading instruments placed outside the confined space shall have the capability to be equipped with an external or internal pump, extension hose and hydrophobic filter. The monitor must be capable of drawing a sample of the existing atmosphere from a depth of 50 feet.

When using a single direct reading instrument outside the space, the probe shall be in such a manner that the atmosphere being sampled is from the Entrants breathing zone, an area one foot above or below the Entrants head. *Note: If an Entrant moves away from the area where the atmosphere is being sampled and monitored. The Attendant shall redirect the Entrant back to the monitored area or the Entrant must exit the PRCS and be fitted with a direct reading atmospheric monitor.*

Testing shall be performed in the following order:

- Oxygen deficiency or enrichment.
- Flammable gases and vapors.
- Toxic air contaminants (i.e., hydrogen sulfide, dust, mists, etc.).

If an unidentified contaminant source is determined to be present, then the entry will be stopped, and the permit will be cancelled. Risk Management will work with Division staff or contractor to determine the unidentified contaminant with appropriate direct-reading instruments or integrated sampling methods.

XVI. Ventilation Plan

A written ventilation plan shall be required for confined spaces based on scope of work (e.g., welding or cutting operations, chemical use, sandblasting, asbestos, or lead abatement) or for reclassification under alternate entry procedures. There may be a need for multiple ventilation plans for each confined space based on the tasks that are being performed. Anytime a hazardous atmosphere (i.e., vapor, gas, fume, dust, mist, aerosol) is present or produced, ventilation shall be provided to reduce the concentration in the environmental regardless of respiratory protection used.

The ventilation plan shall ensure engineering and administrative controls are evaluated to provide adequate protection of the Entrants, such as respiratory protection, local exhaust ventilation and continuous gas monitoring.

The need for a ventilation plan by task will be determined during the confined space JHA process. Ventilation plans shall be provided to the Risk Management Division for review prior to start of the confined space entry. The approved ventilation plan shall be maintained at the confined space throughout the duration of the work in which the plan was approved for. The plan shall be retained by the Risk Management Division for a period of four years.

The plan shall include, but is not limited to the following information:

- Location and description of confined space.
- Scope of work to be performed in the confined space.
- Hazards associated with work to be performed inside the confined space.
- Volume and configuration of the confined space.
- Duration of operations to be performed in the space.
- Concentration of specific toxic contaminates (if known).
- Natural air flow and atmospheric conditions.
- Relation of workers breathing zone to the contaminate.
- Ventilation rate of equipment in cubic feet per minute (CFM).
- Ventilation method(s) to be implemented.
- Atmospheric monitoring and PPE requirements.

XVII. Communication

Communication is imperative not only during rescue operations but also during normal course of work. Communication must be established and work from the inside of the space to the outside, and vice versa. Some confined spaces do not have a direct line of sight or where voice commands work without communication devices such as approved cell phones and two-way radios. Communication methods used between teams should provide backup in the event of a

communication system failure. Communication to be used for entry must be listed on the entry permit.

XVIII. Rescue and Emergency Services

Rescue and emergency services shall be provided for all permit-required confined space entry. Rescue procedures shall be developed for rescuing entrants from permit spaces, for providing necessary emergency services to rescued services, and for summoning additional rescue and emergency services.

Employees performing rescue and emergency services must:

- Be trained to properly use personal protective equipment and rescue equipment.
- Be trained to perform assigned rescue duties, including training as an Authorized Entrant.
- Practice making permit space rescues at least once every 12 months by means of simulated rescue operations; and
- Be trained in basic first aid and cardiopulmonary resuscitation (at least one member of rescue shall hold current certification).

A. Rescue Response Rate

Anticipated confined space hazards will determine the degree and quickness of rescue response. Confined spaces with no recognized hazards require a different level of rescue than those with life-threatening hazards.

For all permit-required confined spaces, at least one Rescuer shall be onsite who is trained and immediately available at the permit-required confined space to perform rescue services. The Rescuer can also be the Attendant or Entry Supervisor, but in the event the Rescuer initiates rescue, the Attendant position shall be filled by another trained and authorized employee. The Attendant will summon additional rescue team or service members in accordance with the confined space rescue plan, which must be capable of responding in accordance with the following:

- If the confined space poses no recognized hazards but may require entry rescue should a worker become incapacitated, rescue shall be summoned to perform and respond to the emergency in no more than 5 minutes, with entry made no more than 15 minutes after arrival to the work site.
- If the confined space poses an immediately dangerous to life and health (IDLH) atmosphere, rescue must be onsite throughout the duration of the work and be capable of providing immediate action to rescue the Entrant(s) within 2 minutes. The rescue team shall be dedicated to this singular entry with no other responsibilities.

B. Types of Rescues

There are three types of rescues: self-rescue, non-entry rescue and entry rescue. Non-entry rescue retrieval systems are always required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the Entrant.

A rescue service shall be designated regardless if non-entry rescue or entry required rescue is the selected approach. When non-entry or entry rescue is selected, retrieval systems or other approved methods shall be used whenever an Authorized Entrant enters a permit space, and shall confirm, prior to entry, that emergency assistance would be available if non-entry rescue fails.

1. Self-Rescue

Entrants may self-rescue themselves when they recognize a critical condition or symptom of exposure and exits the space on their own. Alternatively, an Attendant or Entry Supervisor who is outside of the space may recognize a new hazard and order Entrant to vacate the space before the Entrant is affected. Self-rescue is the preferred rescue method as confined space hazards can quickly incapacitate or kill an Entrant but is prohibited from being the only rescue method.

The Entry Supervisor must reevaluate the space after a self-rescue to determine if the hazards can be controlled and implement the appropriate engineering controls.

2. Non-Entry Rescue

In a confined space emergency, hazards may exist that would affect those who would enter the space to provide rescue. It is best to extract the Entrant without entering the space, so as not to expose the Rescuers to the hazards causing more persons who require rescue. In most cases, approved and appropriate non-entry rescue provisions (retrieval systems) shall be used to allow this option.

In permit spaces where the use of retrieval systems is feasible, the Entrant(s) will wear a full-body harness, retrieval line, and respiratory protection (depending on atmospheric hazards). Retrieval systems must comply with industry standards. The retrieval line may be of rope or a retracting-cable system.

As soon as the Attendant determines that non-entry rescue must be performed, they will use the device to retrieve the Entrant from the permit space. Once the in-house or outside rescue service arrives, if the victim(s) are not yet rescued from the permit space, the rescue service will continue non-entry rescue if feasible. If non-entry is no longer feasible, entry required rescue will be executed.

Unless the requirement is waived, retrieval systems should maintain independent lines on each Entrant, to allow independent retrieval of any Entrant should an incident occur. Unless the entry qualifies for waiver of retrieval systems, they should be attached to the Entrant prior to entry and maintain attached at all times until the Entrant has left the space.

The need for retrieval systems must be evaluated by the Entry Supervisor. It must be recognized that retrieval is not always prudent or even possible. Spaces that contain internal configurations that could entangle or trap a person against a structure, a line attached to the Entrant might not function at all or, even worse, cause further harm to the Entrant during the retrieval attempt. In such cases where the retrieval system is waived, entry required rescue is required.

No Attendant will attempt an entry rescue unless he or she has been relieved by another Attendant and has received the specified rescue training and is equipped for rescue operations.

3. Entry Rescue

When non-entry rescue is infeasible, entry into the permit will be performed by the designated rescue service or team. At all times during the entry rescue operation, an Attendant will be stationed outside the permit space to monitor activity in the space.

Generally, if the cause of the incident prompting rescue cannot be determined to be unrelated to the atmosphere in the space (regardless of gas monitor readings), appropriate atmosphere-supplying respirators shall be worn by rescuers and provided to victims.

This type of rescue is the most hazardous type of rescue because it requires rescue personnel to enter a permit-required confined space that contains an IDLH environment or hazardous situation to extract the injured Entrant(s).

The configuration of the space, work conducted, and the quantity of Entrants will have an impact on the number of Rescuers, types and amount of safety equipment and retrieval devices. Where arranged, third-party rescue services shall be informed of hazards they may confront when called onto perform rescue and be provided access to all permit spaces from which rescue may be necessary so that appropriate rescue plans can be developed.

C. Outside Rescue Services

Outside rescue and emergency services must be arranged prior to confined space operations. The following shall be considered for outside rescue and emergency service designation:

- Evaluate the outside services ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.
- Evaluate the outside services ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing Entrants from the permit spaces.
- Select a rescue team or service from those evaluated that:
    - Has the capability to reach the victims(s) within a time frame that is appropriate for the permit space hazard(s) identified,
    - Is equipped for, and proficient in, performing the needed rescue services, and
    - Agrees to notify the controlling employer immediately if the rescue service becomes unavailable.
- Conduct an evaluation to determine that the outside rescue services selected are equipped for and proficient in performing the needed services for the permit spaces identified in this written program and has the capability of reaching the victim(s) at OC San within a time frame that is appropriate for the permit space hazards identified.

For purposes of outside rescue services, it is prohibited from stating in the rescue plan that dialing 9-1-1 will meet this requirement. If the local fire department is listed in the rescue plan, the Entry Supervisor must verify each of the above requirements with the local fire department. It is OC San's experience that local 911 will only provide medical services once the injured employee has been rescued from the confined space.

The outside service organization must be informed about the nature of the hazards associated the confined space(s). The organization shall provide access to permit spaces requiring services so that it can develop appropriate rescue plans and practice operations.

Prior to conducting the permit space entry, the rescue service must be contacted to verify rescue services will be available during the planned entries. The outsides service organization must contact the controlling employer as soon as rescue services become unavailable. In such case, the controlling employer must immediately notify the Attendant(s) or Entry Supervisor(s), at which time the Attendant(s) or Entry Supervisor(s) will alert all Entrants to evacuate any occupied permit spaces. A written agreement with the outside organization shall be maintained by the controlling employer.

In the event an injured Entrant(s) is/are exposed to a chemical substance, the Safety Data Sheet (SDS) must be kept at the worksite and be made available to the emergency medical responder and the treating medical facility. This is to ensure appropriate medical treatment of the victim(s) and to avoid unnecessary exposure to medical personnel.

D. In-House Services

If the contractor elects to use in-house rescue services, the in-house rescue team must be evaluated and subject to the same requirements as outside rescue services. The in-house rescue team must provide training records to OC San for review and approval. Each member of in-house rescue team shall be informed of the hazards they may confront when called on to perform at this site. At least one member of the in-house services team shall possess current first aid and CPR certification and be always made available during permit space entry.

The contractor must thoroughly evaluate the rescue team to ensure that it is proficient in performing the needed services for the permit spaces identified in this written program and has the capability of reaching the victim(s) at OC San facilities. The rescue team must be capable of being onsite, setup, and provide rescue within the time frame specified in Section XVIII(A) – Rescue Response Rate.

The Attendant and/or Entry Supervisor shall be notified by the contractor if the in-house service becomes unavailable, at which time the Attendant(s) or Entry Supervisor(s) will alert all Entrants to evacuate any occupied permit spaces.

E. Retrieval Systems

Mechanical retrieval devices are required for all permit-required confined space entries. If the confined space is designed and configured that a mechanical device cannot be installed or used without presenting an increased hazard or danger to the Entrant or entry team, then an alternate method must be developed by the confined space Entry Supervisor prior to entry. Alternate methods may incorporate the use of lifelines, ladders, pulleys, and man baskets. Alternate methods must be approved by Risk Management.

Retrieval systems shall meet the following requirements:

- Each Authorized Entrant shall use a full body harness, with a retrieval line attached at the center of the Entrant’s back near shoulder level.
- The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than five feet deep.

- Equipment that is unsuitable for retrieval shall not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines used by other Authorized Entrants, or retrieval lines that will not work due to the internal configuration of the permit space.

F. Emergency Services

Emergency services shall be notified soon after rescue services are initiated. When working at OC San's Plant 1 or 2, the Control Center shall be notified immediately via two-way radio, cell phone or from an OC San landline. The Control Center can be reached by calling 714-593-7025 or dialing 2222 from an OC San landline. The Control Center once briefed with the location and nature of the emergency will contact local emergency services. The Control Center will dispatch the OC San Medical Response Team to assist with medical services until emergency services arrive.

When working at OC San's pump stations or other off plant location, local emergency services shall be contacted by dialing 911.

Medical services shall be provided as soon as the victim(s) reach the outside of the space. The victim(s) will be transported to the hospital by local emergency services. If victim(s) rescued from the permit space have been exposed to a substance for which a safety data sheet (SDS) or other similar written information is required to be kept at the site, the pertinent SDS(s) or written information shall be made available to the medical facility or personnel treating the exposed victim(s).

G. Rescue Plans

A plan shall be developed prior to entry for persons conducting rescue operations. The rescue plan shall be developed by a person competent in rescue. The plan shall include the following at a minimum:

- Characteristics of the confined space (e.g., type, function, configuration, construction, size, entry points).
- Assignment of roles.
- Retrieval systems.
- Rescue systems.
- Personal protective equipment (including atmosphere supplying respirators).
- Communication and communication equipment.
- Ventilation and atmospheric monitoring requirements.
- Control of all sources of energy.
- Rigging required for rescue (e.g., slings, rescue basket, ropes, stabilizers, winches).
- Perimeter control, if needed (e.g., may need police, barrier tape, control traffic, limit access).
- Potential intervention team (e.g., standby team to assist during rescue).
- Debrief and documentation after rescue, including post incident analysis.

XIX. Program Administration

After each entry, a Division Supervisor shall review canceled entry permits and all supporting data. The permits will be reviewed to determine if any problems were encountered requiring immediate or future corrective action and discrepancies in how the permits were completed. The Division Supervisor will retain copy of the permit and communicate any problems with the program directly to Risk Management. Risk Management will update inadequacies in this written Confined Space Entry Program to ensure that employees participating in entry operations are protected from hazards.

To accomplish this responsibility, Risk Management will conduct a single review at least annually or prior to successive entries performed since the previous review. OC San will then revise the written program as necessary. If no entries were performed during a review period, no review is necessary.

However, OC San will also review entry operations sooner whenever there is reason to believe that the measures taken under the permit space program may not protect employees. Risk Management will then revise the program to correct deficiencies found to exist before subsequent entries are authorized.

Examples of circumstances requiring review of the permit space program include:

- Any unauthorized entry of a permit space.
- The detection of a permit space hazard not covered by the permit.
- The detection of a condition prohibited by the permit.
- The occurrence of an injury or near miss during entry.
- A change in the use or configuration of a permit space.
- Employee concerns about the effectiveness of the program.

Affected employees will be retrained in any program revisions that reflect changes in duties, hazards, and/or entry procedures. Employee training records are maintained in the computerized Training Management System Database.

The program will also be evaluated annually by Risk Management to ensure that it is effective in providing adequate protection from hazards associated with confined spaces during Entrant activities.

The following steps shall be followed to conduct this program review:

- Shall determine if regulations or national consensus standards have changed since the last annual program review.
- Review Federal and California OSHA Regulations, interpretations, and documents.
- Review ANSI standards.

The Risk Management Division shall review the current PRCS program, proposed changes to State and Federal Regulations and national consensus standards and recommend changes to the OC San Permit Required Confined Space Program as required.

XX. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XXI. Training

Employee training is an integral component of the Confined Space Entry Program. District staff and contractors who job duties requires him or her to participate in a confined space entry shall be trained to a level of understanding, knowledge, and skills necessary for the safe performance of the duties assigned to them.

A. OC San Staff

1. Permit-Required Confined Space Training

District staff participating in permit-required confined space entries must complete all the prerequisite training classes. OC San entry teams must comprise of an Entry Supervisor, Attendant and Authorized Entrant. Prerequisite training includes but is not limited to the following:

- Permit Required Confined Space Entry
- Atmospheric Monitoring
- Self-Contained Breathing Apparatus (SCBA)
- Fall Protection
- Personal Protective Equipment (PPE)

Additional training is required whenever:

- There is a change in the permit space operations that presents a hazard(s) that the entry team has not encountered in previous confined space entries.
- Whenever an entry team member has reason to believe that there is a deviation in the permit space entry procedures.
- Whenever there are inadequacies in an entry team member’s knowledge or use of the permit space entry procedures.
- Whenever there are new revisions are made to the permit space entry procedures and or the OC San Confined Space Entry Program.

OC San employees must pass the confined space entry test with a score of 80% or attend an annual confined space entry training class to remain qualified. Failure to do so will make them ineligible to participate in permit required confined space entries.

2. Non-Permit Confined Space Training

OC San provides general confined space awareness training for entry into non-permit confined spaces. OC San staff who have non-permit confined space training may only enter confined spaces that have been temporarily reclassified by Risk Management as a non-permit confined space.

OC San staff participating in non-permit confined space entries must complete all the prerequisite training classes listed below before they can become permit required confined space entry qualified.

- Confined Space Awareness Training
- Atmospheric Monitoring
- Personal Protective Equipment (PPE)

Confined Space Awareness training is provided to employees whose job classification does not require them to enter confined spaces or be involved in any aspect of entry. The purpose of the awareness training is to educate employees to be able to recognize a confined space, to understand limitations of working around a confined space, and to recognize and avoid hazards associated with a confined space.

3. Confined Space Rescue Training

Rescue training is required for employees who are profiled or volunteer to be part of an Entry Rescue team. The following prerequisite training is required for rescue team employees.

- Permit Required Confined Space Entry
- First Aid and CPR
- Atmospheric Monitoring
- Mechanical Retrieval Equipment
- Personal Protective Equipment
- Communication Equipment
- Self-Contained Breathing Apparatus (SCBA)

In addition, the rescue team members must simulate a rescue at least every 12 months rescue team must satisfy the requirements described in the CALOSHA safety orders.

B. Contractors

Contractors shall provide training to its employees that are expected to enter permit spaces, as regulated by the confined spaces in construction standard, to ensure that each employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned to him or her as they relate to the standard. The training program shall be provided at no cost to the employee and in a language and vocabulary that the affected employee can understand.

Training must result in an understanding of the hazards in a permit space and the methods used to isolate, control, or in other ways protect employees from these hazards. Those employees not authorized to perform entry rescues must also understand the dangers of attempting such rescues.

Confined space training records for all Authorized Entrants, Entry Supervisors, Attendants, and Rescuers must be provided to OC San prior to entry operations. The contractor must provide training and retraining to affected employees at the following times:

- Before the employee is first assigned duties under the standard.
- Before there is a change in assigned duties under the standard.
- Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained.
- Whenever there is any evidence of a deviation from the permit space entry procedures.
- Whenever there are inadequacies in the employee's knowledge or use of permit space entry procedures.
- When new or revised entry procedures are introduced.

After an affected employee has completed training, the contractor will determine whether the employee has proficiency in and can safely perform his or her respective and required duties. The contractor shall provide the name, role, and listed trainings in a training record. The training record shall be made available for inspection by for the period the employee is employed by the contractor.

XXII. Exceptions/Conditions/Provisions

Contractors shall request clarification on this written program, including the current confined space inventory list, particularly for issues which may impact a contractor’s proposed fee, work method, safety procedures, training requirements, or schedule, in writing as a bidder question to OC San for a response prior to bidding. Risk Management will provide technical assistance to contractors regarding this program prior to or during confined space entry.

XXIII. References

Injury and Illness Prevention Program

NFPA 350, Guide for Safe Confined Space Entry and Work

SOP-102, Personal Protective Equipment

SOP-109, Respiratory Protection Program

SOP-118, Hot Work Program

SOP-205, Electrical Safety Program

SOP-605, Control of Hazardous Energy (LOTO)

SOP-608, Contractor Safety

SOP-626, Elevated Work and Fall Protection Program

Title 8, California Code of Regulations, Article 37, Confined Spaces in Construction, Sections 1950 - 1962

Title 8, California Code of Regulations, Article 108, Confined Spaces, Sections 5156 - 5158

XXIV. Revision History

Version	Date	By	Reason
1.0	11/21/2013		
2.0	08/09/2018	Frattali, John	Program Update
3.0	07/05/2020	Frattali, John	Periodic Update – Refer to Program Change Log
4.0	09/24/2021	Lam, Brian	Annual Program Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-605 (Ver. 5) Control of Hazardous Energy (LOTO)
Standard Operating Procedure (SOP)	Effective: 11/22/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The purpose of this Standard Operating Procedure (SOP) is to protect the Orange County Sanitation District (OC San) staff and Contractors from hazardous energy during the servicing and maintenance of machines, equipment and/or facilities, or during construction-related activities that utilize or store hazardous energy. During servicing, maintenance or construction-related activities, the unexpected startup or release of stored energy could cause serious injury or death to employees.

II. Background

OC San has developed this procedure in accordance with the state of California Occupational Safety and Health Administration (CALOSHA) regulations, including the Control of Hazardous Energy for the *Cleaning, Repairing, Servicing, Setting Up, and Adjusting Operations of Prime Movers, Machinery and Equipment, Including Lockout/Tagout* (Title 8, California Code of Regulations (CCR), Section 3314).

This procedure also complies with the *Certification Requirements for Operators* under the California State Water Resources Control Board (Title 23, CCR, Section 3670.1).

III. Applicability

This procedure applies to all work performed at the OC San treatment plants, pump stations and the collection system by OC San staff and Contractors while working at OC San facility.

This procedure covers the servicing cleaning, repair, setup, adjusting, unjamming and maintenance of machines, equipment and/or facilities in which the unexpected energization or startup, or release of stored energy, could harm employees. This procedure establishes minimum requirements for the control of hazardous energy (LOTO).

Energy sources may include electrical, mechanical, hydraulic, pneumatic (gas or air), chemical, radiation, thermal, pressure and gravity (suspended parts).

The procedure applies if personnel are required to remove or bypass a guard or other safety device during servicing and maintenance of equipment, if required to place any part of their body in an area where a danger zone exists during a machine or equipment operating cycle, or if performing work in a confined space.

This procedure does not apply to:

1. Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or startup of the equipment is controlled by the unplugging of the equipment from the energy source, and the plug being under the exclusive control of the employee performing the servicing or maintenance.

2. Workers performing servicing and maintenance on machines, equipment, and/or facilities who are NOT exposed to the unexpected energization or startup of the machines or equipment, or the release of hazardous energy.

3. Normal production operations.

IV. Definitions

Affected Employee - An employee whose job requires them to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tag out, or whose job requires them to work in an area in which such servicing or maintenance is being performed. *Note: An Affected Employee becomes an Authorized Employee when that employee's duties include performing servicing or maintenance. See definition of an Authorized employee below. Before performing service or maintenance on equipment that is locked or tagout, that employee must receive the training.*

Authorized Employee - a qualified person who locks out or tags out machines or equipment to perform the servicing or maintenance on that machine or equipment. Furthermore, any employee who implements a LOTO procedural element, including performing energy source isolation, dissipating potential energy, verifying energy isolation, implementing actions to release LOTO, or test or position machines or equipment. Only Authorized Employees may perform physical lockout of equipment. Each Authorized Employee shall receive training in the recognition of hazardous energy sources, development and implementation of hazardous energy control procedures, and hazards related to servicing and maintenance of equipment or machines. Authorized Employees must receive the training as prescribed in the training section of this program.

Capable of Being Locked Out – an energy isolating device that is designed with a hasp or other means of attachment to which, or through which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace energy isolating device or permanently alter its energy control capability.

Contractor – organization or individual that provides goods and services to OC San under terms specified in a contract. The term Contractor applies to Contractors, subcontractors, consultants, service representatives and visitors.

Crew Leader – the Authorized Employee who oversees or leads a group of servicing or maintenance employees (e.g., electricians, mechanics, Contractor). The Crew Leader would be designated for each workforce or crew. When more than one crew is involved, one Crew Leader would account for a single group of personnel. Each Crew Leader is responsible for maintaining accountability and for the individual exposure status of each employee in that specific group. The Crew Leader can assist the PAE with Group LOTO.

De-energized – disconnected from all energy sources and containing residual or stored energy.

Electrical Utilization – power 480 volts or less to a single load from a single breaker.

Energy Control Procedure (ECP)– an energy control procedure outlines the scope, purpose, authorization, rules, and techniques to control hazardous energy. The procedure contains steps for shutting down, isolating, blocking, and securing machines or equipment. The procedure also contains steps for placement, removal, and transfer of lockout devices or tagout devices, and a description of who has responsibility for them.

Energy Isolating Device – a mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices. They are installed when replacement or major repair, renovation, or modification of a machine or equipment is performed, and when new machines or equipment are installed.

Facility – buildings, structures and process systems associated with the OC San treatment plants, pump stations and collection system.

Lockout – the placement of lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device – a device that utilizes a positive means, such as a lock, chain, block, etc. to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment.

Lockout Tagout (LOTO) – is a broad term describing the use of procedures, techniques, designs, and methods to protect personnel from injury due to inadvertent release of hazardous energy. LOTO is commonly called the control of hazardous energy.

Normal Production Operations – the utilization of a machine or equipment to perform its intended function. The physical act or process of removing or releasing the isolation, during the start-up process, as well as machine or equipment re-energization and/or start-up is considered a normal production operation.

Primary Authorized Employee (PAE) – an Authorized Employee whose primary responsibility is to implement and coordinate LOTO, and verify that the steps taken, in accordance with the specific energy control procedure, have in fact isolated the machine or equipment effectively from the hazardous energy sources. OC San PAE's exercising overall responsibility for adherence to this policy and the ECP are as follows:

1. Operations is the Primary Authorized Employee (PAE) for work related to plant process equipment for maintenance, electrical utilization, and construction activities.

2. Maintenance is the PAE for non-process critical equipment as determined by Operations. Maintenance shall consult with Operations on to determine PAE ownership.

3. A Collections Mechanic is the Primary Authorized Employee (PAE) for work related to the collections system and pump stations for maintenance, electrical utilization, and construction activities.

4. An Electrical Technician is the Primary Authorized Employee (PAE) for work related to electrical distribution, lighting, and heating, ventilating, and air-conditioning (HVAC) systems.

Qualified Person (electrical) – a person who has received training in and has demonstrated skills and knowledge in the construction and operation of electric equipment and installations and the hazards involved.

Servicing and Maintenance – workplace activities including, but not limited to, constructing, erecting, installing, repairing, troubleshooting, testing, dismantling, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and adjusting or tool changes where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Tagout – the placement of a tagout device on an energy isolating device, in accordance with established procedure, to indicate that the energy isolating device and equipment being controlled cannot be operated until the tagout device is removed.

Tagout Device – a prominent warning device, such as a tag, to indicate that the energy isolating device and the equipment being controlled cannot be operated until the tagout device is removed.

Verification – prior to starting work on machines, equipment or processes that have been locked out or tagged out, Authorized Employees shall verify that the isolation and de-energization has been accomplished. *Note: Verification can be accomplished by testing circuitry, cycling, visually inspecting position, manually trying; monitoring movement or discharge, observing bleeds, gauges, indicators, etc. or other available means.*

V. Responsibilities

A. Risk Management

1. Responsible for the development of this program, which on an annual basis, shall be reviewed and updated, as necessary.

2. Provide and coordinate initial training and refresher training.

3. Provide technical assistance regarding the control of hazardous energy.

4. Audit LOTO including equipment specific energy control procedures for compliance with this procedure.

B. Supervisors

1. Verify that employees performing servicing or maintenance activities, performing energy source isolation, implementing LOTO on machines or equipment, dissipating potential energy, verifying energy isolation, releasing LOTO, or testing and positioning of machines or equipment have been trained prior to such activities.

2. Responsible for the effective use of this procedure in the work group and to see that all required procedures are followed in every instance.

3. Verify that proper lockout equipment, including personal protective equipment (PPE), electrical testing equipment and safety equipment is available for use.

4. Ensure that energy control procedures are being used by Authorized Employees where required by this program.

5. Audit LOTO including equipment specific energy control procedures for compliance with this program.

C. All Employees

1. Shall maintain compliance with this procedure.

2. Shall maintain issued energy isolating devices, locks, and tags in good working condition.

3. Never tamper with or remove LOTO devices.

4. Immediately report incidents, near misses, or hazards resulting from activities related to the control of hazardous energy.

D. Affected Employees

1. Must understand the hazards associated with energized and de-energized equipment.

2. Shall follow instructions provided by supervisors and Authorized Employees who are conducting LOTO.

3. Must not perform servicing or maintenance on a machine or piece of equipment which is under LOTO or on a piece of equipment that should locked out and is not. Only Authorized Employees are permitted to perform servicing and maintenance work.

4. Must be aware of LOTO procedures used to prevent unexpected startups.

5. Shall be prohibited from attempting to restart machines or equipment that are under LOTO.

E. Authorized Employees

1. Must have training and instruction in their duties and responsibilities regarding LOTO.

2. Shall recognize the hazards which may be faced during LOTO activities.

3. Shall develop a task and/or equipment specific energy control procedure when one does not already exist.

4. Shall update any existing energy control procedure when discrepancies are observed during implementation of the procedure. See Section XI for how to update the procedure.

5. Shall identify deficiencies or other known sources of energy that need to be isolated and note them on the equipment specific energy control procedures.

6. Must follow requirements of this procedure and energy control procedures, where applicable.

7. Shall verify that sources of energy listed on the energy control procedure are accurate and that the energy control procedure is being followed.

8. Shall use appropriate and applicable PPE and testing equipment.

F. Primary Authorized Employees (PAE)

1. Shall exercise primary responsibility for implementation and coordination of Group LOTO for control of hazardous energy sources for equipment to be serviced or maintained.

2. May delegate tasks associated with LOTO to the Crew Leader, which may include aiding with equipment isolation, de-energization, bleeding, draining, applying restraint devices and lockout devices.

G. Crew Leader

1. Shall support the PAE with LOTO.

2. Shall maintain responsibility and accountability for everyone in their crew working on the specific LOTO, which includes verifying that all have applied necessary locks or tagout devices, signed the ECP, and performed self-verification of the LOTO.

H. Contractors

1. Must have a written program for the control of hazardous energy. The program shall be developed, maintained, and implemented according to applicable governmental regulations and this procedure.

2. Must submit written energy control procedures to the OC San project contact for lockout of Contractor rented or owned equipment that may affect OC San employees or facilities. The OC San project contact will provide records of the energy control procedures to Operations and Maintenance.

3. Contractor employees performing or directly supervising construction-related activities that utilize or store hazardous energy must have Authorized Employee training. The Contractor is responsible for this training.

4. Shall coordinate all hazardous energy control activities with the designated OC San construction management inspector, who in turn will coordinate with the OC San PAE. Lockout will be performed under the direction of an OC San PAE utilizing Group LOTO.

5. The PAE will verify isolation of energy hazards with the Contractor Crew Leader. The Contractor Crew Leader is responsible for communicating the LOTO to its employees, including verification.

6. Shall supply unique and personally identifiable keyed locks for lockout to each Authorized Employee. Locks issued to an Authorized Employee can only contain one key, which remains in possession of the Authorized Employee in which the locks were issued. Note: OC San will not provide locks for Contractor use.

7. Must not manipulate energy isolation devices or lockout devices on machinery, equipment, or facilities.

8. Each Contractor Authorized Employee shall verify that all hazardous energy has been isolated and released prior to the start of work.

9. Authorized Contractor employees shall remove all personal locks once they have completed the job, except where Section XII, Employees Unavailable to Unlock would apply.

10. Operate energy isolating devices or apply lockout device(s) only under the direction of an OC San PAE.

VI. LOTO Equipment

A. General Requirements

LOTO equipment shall not be altered or modified. Equipment shall not be used if damaged or where determined that it longer meet the manufacturer's intent for hazardous energy control. Equipment shall only be used as it was designed.

Personal and group locks shall only be used for energy isolation of machinery, equipment, and/or facilities and not to be used for other purposes. For example, these locks shall not be used to prevent against theft (securing toolbox, cabinets, locker, etc.) or to render equipment out of service. Locks differing from the ones listed in Subsection B and C of this section shall not be used by OC San Authorized Employees for LOTO. The implementation of locks used for purposes other than LOTO may be governed by other OC San safety programs and will not be used for LOTO.

B. Personal (Red) Locks

Personal locks will be issued to Authorized Employees only. Personal locks are American Lock, Series A1100 (red) and issued at no cost to the Authorized Employee. No other locks are permitted to be used by OC San Authorized Employees for the control of hazardous energy. These personal locks are uniquely identifiable and will only have one common key.

Contractors are responsible for providing locks to their Authorized Employees. Contractor locks do not need to be manufactured by American Lock but must be uniquely keyed (no combination locks allowed).

The Authorized Employee shall maintain possession of their assigned personal locks and key. The key for the personal locks shall not be given to a supervisor or coworker for use or storage. Personal locks shall only be applied or removed by the Authorized Employee in which they were assigned. Employees who are no longer authorized to participate in LOTO program shall return all locks and keys to Risk Management.

C. Equipment (Black) Locks

Equipment locks may be distributed to Authorized Employees designated as a Primary Authorized Employee. Equipment locks can be shared among other Primary Authorized Employees within the same Division. Equipment locks are American Lock, Series A1100 (black) and issued at no cost to the Primary Authorized Employee.

Equipment locks are the only locks permitted to be used by OC San employees for group LOTO under lock box applications. Refer to Section VIII(C) for guidance on lock box installations. These equipment locks are uniquely identifiable and will only have one common key.

D. Tags

Tags shall be of sufficient material that is capable of enduring adverse conditions (weather, wet locations, corrosive materials, etc.) that will not cause the tag to deteriorate or message on tag to become illegible. Tags can be ordered from the Warehouse.

Tags shall contain at a minimum the following legible information:

1. First and Last Name of Authorized Employee (Personal Locks Only)
2. Division Number or Contractor Name
3. Phone number of people placing tag (Contractor Only)
4. Date of Installation
5. Reason (Work Order or Project Number)

Tags must be standard “Danger – Do Not Operate” (black, red, and white).

Tags installed as a tagout device shall be installed to prevent inadvertent or accidental removal. The securing means shall be of sufficient strength to prevent removal without destroying the securing means (such as a zip or cable tie) or require the use of a tool to remove it. Tagout device attachment means shall be of a non- reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.

If lockout is not feasible, tagout tags shall be secured directly on the energy isolating device on or as close as possible to the isolation point.

Tags differing from the ones listed above may be used at OC San for purposes other than LOTO. The implementation of tags used for purposes other than LOTO will be governed by other safety programs and/or OC San policies.

E. Energy Isolation Devices

Isolating devices shall be adequately labeled or marked to indicate their function unless they are located and arranged so that their purpose is evident. The devices shall be capable of either being locked or otherwise secured in an effective isolating position.

When replacement or major repair, renovation, or modification of a machine or equipment is performed, and when new machines or equipment are installed, such devices shall be designed to accept a lockout device.

F. Restraint Devices

Physical restraint devices (e.g., pins, blanks, blocks, props, or chains) that restrict hazardous motion shall comply with applicable standards when one exists for the device and be designed, constructed, and installed to hold the full working force of the system when hazardous energy is actuated. Restraint devices can be ordered from the Warehouse.

G. Group Lock Box

A lock box is a container that secures the keys from locks placed on energy isolating devices as part of group LOTO, which allows Authorized Employees in the group to apply their personal lock directly to the lock box instead of the individual isolation points. Lock boxes can be ordered from the warehouse.

VII. Hazardous Energy Control procedures

The following eight step process shall be completed for the Control of Hazardous Energy. Refer to Section VIII for Group LOTO.

A. Step One – Preparation for Shutdown

1. Identify hazardous energy source(s) to be controlled and method or means for controlling the energy. Authorized Employees must be familiar with the specific machinery, equipment, or facilities in which LOTO will be conducted.

2. Notify the Affected Employee(s) that the equipment will be isolated for servicing and maintenance. Contractors, Operators, and Maintenance personnel working upstream, downstream, or adjacent to may also be considered Affected Employees and must be notified.

3. Obtain the Energy Control Procedures (ECP) and prepare for equipment shutdown. If an ECP does not already exist, one must be developed by Authorized Employees prior to initiation of LOTO.

B. Step Two – Equipment Shutdown

1. Turn off or shut down equipment by following established ECP. The ECP will be initiated by OC San Authorized Employees only.

2. An orderly shutdown must be utilized to avoid any additional or increase of hazards to employees because of the equipment stoppage.

C. Step Three – Equipment Isolation

1. Physically locate and operate the required energy isolating devices (e.g., manually operated switch, valve) to control the hazardous energy to the equipment.

2. Equipment controls shall be secured in a "safe" or "off" position.

3. Emergency stop buttons (e-stops) shall not be used during LOTO. Verify that all emergency stop buttons on the system are not engaged.

4. Circuit control devices (include but are not limited to push buttons, selector switches, wall switches, emergency stop buttons or equipment activating devices) are not energy isolating devices.

5. Electrical systems shall only be operated by authorized, trained and/or qualified persons. Refer to the Electrical Safety Program (SOP-205) for more guidance.

D. Step Four – Application of Lockout or Tagout Devices

1. Place a restraint device (e.g., adjustable cable lockout, breaker clamp, valve cover) at each energy isolating device. The restraint device shall be of suitable construction that prevents inadvertent re-energization of machinery or equipment.

2. Each Authorized Employee implementing LOTO or isolating equipment, dissipating potential energy, verifying energy isolation, testing, and positioning equipment, or performing the servicing and maintenance work shall attach one personal lock and tag to each restraint device or lock box.

3. If an energy isolating device is not accepting of a lockout device, a tagout device must be used. Each Authorized Employee shall also apply a tagout device to each energy isolating device that is not capable of accepting of a lockout device, except where managed as Group LOTO. The tagout device shall be attached at the same location that the lockout device would have been attached.

4. No employee shall perform work under another Authorized Employee's lock or tag.

E. Step Five – Stored Energy

1. Stored or residual energy must be released or dissipated from each system in such a manner as to isolate the equipment or process from the accumulation or release of hazardous energy. Stored and/or residual energy shall be released, relieved, blocked, bled, restrained, or rendered safe (i.e., grounding).

2. If there is a possibility of re-accumulation of stored energy, verification of isolation must be continued until the work is completed, or until the possibility of such accumulation no longer exists.

3. In the case of stored or residual energy, warnings or instructions shall be provided when it is not practical to dissipate the energy.

F. Step Six – Verification of Isolation

1. Prior to servicing or maintenance activities, the Authorized Employee(s) shall verify for proper and effective isolation and de-energization of hazardous energy. Multiple verifications steps may be required. Verification can include, but is not limited to the following:
    a. Activating startup devices and/or attempting to operate controls.
    b. Verify zero voltage using voltage testing equipment/indicators.
    c. Verify zero pressure on gauges.
    d. Perform or observe bleeding procedures.

e. Return all operating controls(s) to the neutral or off position after verifying the isolation of the equipment.

f. Walk the line to verify all sources are accounted for and controlled.

G. Step Seven – Servicing and Maintenance Work

1. Once hazardous energy has been isolated and verified, the work can be performed.

2. Steps 2 through 6 shall be performed if hazardous energy reaccumulates.

H. Step Eight – Release from LOTO Control

1. Before lockout or tagout devices are removed and energy is restored to the equipment, procedures shall be followed, and actions taken by the Authorized Employee(s) to ensure the following:

   a. Nonessential items have been removed and to ensure that machine or equipment components are operationally intact, including guards and covers.

   b. All employees have been safely positioned away or removed from the work area.

   c. Verification that all operating controls are in safe or off position.

   d. After lockout devices have been removed and before the equipment is started, the Affected Employee(s) shall be notified that the devices have been removed and the equipment is ready for normal production operations.

I. Lockout Interruption (Energized Testing)

When lockout devices must be temporarily removed for troubleshooting, positioning of the machine, etc., the sequence of the above subsections shall be followed and LOTO reapplied in accordance with the required lockout sequence. In situations where there is a need for testing or positioning of the equipment or process, the following shall apply:

1. Clear the equipment or process area of all tools and materials.

2. Clear all personnel from the equipment or process.

3. Remove necessary locks or tags from energy-isolating devices. Record which isolation devices were removed on the ECP.

4. Proceed with testing or positioning.

5. De-energize and relock or retag the energy-isolating device(s).

6. Verify that hazardous energy has been removed, including any residual energy that may have been stored during the test or equipment positioning.

VIII. Group LOTO

A. General

1. Group LOTO is conducted when servicing and/or maintenance is performed by a crew, craft, department, or other group, they shall utilize a procedure which affords the

employees a level of protection equivalent to that provided by the utilization of a personal lockout or tagout device.

2. Group LOTO is how each Authorized Employee exercises his or her control over the associated hazardous energy by attaching their personal locks or tagout devices onto a Group LOTO mechanism. Group LOTO mechanisms consist of multi-lock hasps and lock boxes. Procedures for performing LOTO with multi-lock hasps and lock boxes are provided in Section B and C below.

3. Group LOTO will be implemented when there is two or more Authorized Employees.

4. Group LOTO shall be managed by a PAE with assistance from a Crew Leader. The PAE has primary responsibility for administering the LOTO sequence outlined in Section VII. The PAE will be designated per work order by Supervision (or designee).

5. For OC San work, the Crew Leader will be assigned by Supervision.

6. For Contractor work, the Crew Leader will be an onsite Foreman, Superintendent, or designee. The Contractor's Crew Leader will not assist with isolations and will only be responsible for verifying that the hazardous energy has been controlled, maintaining accountability for individual exposures of each employee, maintaining compliance with OC San policy, and coordinating shutdowns activities with OC San.

B. Multi-lock Hasps

1. A multi-lock hasp shall be placed at each restraint device of each energy isolating device if more than one Authorized Employee is involved in the LOTO.

2. A multi-lock hasp allows up to 6 individual locks to be applied on each energy isolation device. The practice of daisy-chaining multi-lock hasps should not be undertaken, as the hasp is vulnerable to failure.

3. Group LOTO using multi-lock hasps will be performed in accordance with the following:
    a. The PAE shall provide necessary restraint devices and multi-lock hasps.
    b. The PAE shall de-energize, isolate, and dissipate hazardous energy sources according to the ECP. Refer to Section XI for requirements on ECPs. The Crew Leader may assist with the isolation at the direction of the PAE.
    c. The PAE shall affix multi-lock hasps at each restraint device of an energy-isolating device. If the energy-isolating device is not accepting of a multi-lock hasp, a tagout device shall be used. The PAE shall secure the multi-lock hasp with a personal lock and tag. The PAE must be the first to lock on and the last to lock off the hasp.
    d. The Authorized Employee(s) shall attach one personal lock and tag to each multi-lock hasp. If tagout devices are used, each Authorized Employee shall also apply a tagout device on the energy-isolating device that does not accept a lockout device.
    e. The Authorized Employee(s) shall demonstrate their acceptance of the ECP by reviewing it and performing a physical and visual verification check of isolation points. A copy of the approved ECP shall be made available at the equipment being serviced. If the hazardous energy has not been controlled, the Authorized Employee(s) shall notify the PAE.

f. The Authorized Employee(s) shall sign the ECP once they have verified that the hazardous energy has been controlled and dissipated from the equipment or system. Only after the Authorized Employee(s) sign the ECP work may begin.

g. The Authorized Employee(s) shall remove their personal locks and tags from the multi-lock hasp or tagout devices once they have completed the work or job task, are reassigned to a different work order, transfer to a different work group or plant.

h. The Authorized Employee(s) who arrive later to the work site shall not work on the isolated equipment until they have reviewed the ECP with the Crew Leader, conducted a visual and physical verification of all isolation points, and attached their lockout and/or tagout devices.

i. Once the work is completed by the Authorized Employee(s), the Crew Leader shall notify the PAE. The PAE and Crew Leader will verify that the work has been completed, all guards are put back in place and that all nonessential items have been removed from the work area.

j. The PAE shall remove the group LOTO mechanisms and restraint devices.

k. The PAE will notify all Affected Employees that the equipment is ready for normal production operations. The PAE shall follow normal startup procedures.

C. Lock Box

1. At the sole discretion of the PAE, a lock box can be implemented under any of the following situations:

   a. More than six (6) Authorized Employees are involved in the servicing or maintenance of machinery, equipment, or systems.

   b. Five (5) or more energy-isolating devices are required to isolate the machinery, equipment, or systems for service or maintenance work.

   c. Contractor personnel involved in the construction, maintenance, and/or retrofitting of OC San machinery, equipment and/or facilities.

   d. Based on physical size and extent of equipment and interdependence or interrelationship of components in the system or between different systems.

2. Group LOTO using a lock box shall be completed in accordance with the following:

   a. The PAE shall provide necessary restraint devices and group LOTO mechanisms, including equipment locks and tags, and tagout devices (if needed).

   b. The PAE shall de-energize, isolate, dissipate hazardous energy sources according to the ECP. Refer to Section XI for requirements on ECPs The PAE shall affix one equipment lock and tag each restraint device of an energy-isolating device. If the energy-isolating device is not accepting of a lock, a tagout device shall be used. The Crew Leader shall assist with the isolation at the direction of the PAE, which can include applying restraint devices and equipment locks and tags.

   c. The PAE shall place the key to the equipment locks inside the group lock box and secure the lock box by attaching a personal lock and tag to the lock box. The PAE must be the first to lock on and the last to lock off the group lock box.

   d. The Authorized Employee(s) shall attach their personal lock and tag on the lock box.

e. The Authorized Employee(s) shall demonstrate their acceptance of the ECP by reviewing it and performing a physical and visual verification check of isolation points. A copy of the approved ECP shall be attached to the group lock box in a weatherproof container. If the hazardous energy has not been controlled, the Authorized Employee(s) shall notify the PAE.

f. The Authorized Employee(s) shall sign the ECP once they have verified that the hazardous energy has been controlled or eliminated and dissipated from the system. Work may begin only after the Authorized Employee(s) sign the ECP.

g. The Authorized Employee(s) shall remove their personal lock and tag from the lock box once they have completed the work or job task, are reassigned to a different work order, transfer to a different work group or plant.

h. The Authorized Employee(s) who arrive later to the work site shall not work on the isolated equipment until they have reviewed the ECP with the Crew Leader, conducted a visual and physical verification of all isolation points, and attached their personal lock and tag on the group lock box.

i. Once the work is completed by the Authorized Employee(s), the Crew Leader shall notify the PAE. The PAE and Crew Leader will verify that the work has been completed, all guards are put back in place and that all nonessential items have been removed from the work area.

j. The PAE shall remove lockout devices and equipment locks and tags. The Crew Leader can assist with removal of these devices.

k. The PAE will notify all Affected Employees that the equipment is ready for normal production operations. The PAE shall follow normal startup procedures.

IX. Shift/Personnel Change

A. Transfer of control will occur between the Authorized Employee(s) only. During transfer of LOTO authority between arriving and outgoing Authorized Employees, the following must be performed:

1. Ensure that all Authorized Employees who are leaving the work site have removed their personal locks.

2. All oncoming Authorized Employees shall review the ECP and verify that all the isolated machinery, equipment, or systems are in the proper positions and secured by equipment locks and tags. Each time an Authorized Employee attaches their personal lock, they must physically and visually verify that the equipment is still isolated, per the ECP.

3. Once the verification is completed, all oncoming Authorized Employees shall attach their personal lock and tag to the group lock box before starting work.

4. The ECP shall remain attached to the group lock box to allow the oncoming Authorized Employees an opportunity to review and verify the LOTO conducted.

B. Lockout or tagout devices shall be removed by the Authorized Employee who applied them. However, if the Authorized Employee is not available when the machinery or equipment is ready to be put back into service, Section XII must be followed.

C. All Authorized Employees assigned to work on a multi-shift LOTO must remove their personal lock and tags from the group lock box during shift and personnel changes.

X. LOTO Affecting Electrical Power

A. All electrical work, including LOTO on electrical systems, shall be performed in accordance with the OC San Electrical Safety Program (SOP-205).

B. If LOTO requires electrical outage or has the potential to affect plant or pump station operation, the following must be completed (where applicable):

1. Notify Administrative, Laboratory, and Information Technology Supervisors if the electrical power outage will affect their ability to perform their work.

2. Notify Operations and Maintenance Supervisors staff if the electrical power outage will affect their ability to perform their work or the work of contracted employees.

3. If the electrical power outage will or has the potential to affect ongoing construction work, notify Construction Management Supervisory staff.

C. Electrically live parts not suitably guarded, isolated, or insulated to which an employee is exposed shall be de-energized before the employee works on or near them. Refer to SOP-205.

D. All electrical isolations performed in the power generating facilities, including auxiliary equipment, must be coordinated through the on-duty Power Plant Operator and conform to SOP-205.

XI. Energy Control Procedures

A. General

1. Energy Control Procedures (ECP) shall be developed for each unique machine, equipment or facility requiring service, maintenance, or construction-related activities prior to implementation of LOTO, unless if all the following conditions are met:
    a. The machine or equipment has a single energy source which can be readily identified and isolated.
    b. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
    c. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance.
    d. A single LOTO device will achieve a locked-out condition.
    e. The LOTO device is under the exclusive control of the Authorized Employee performing the servicing or maintenance.
    f. The servicing or maintenance does not create hazards for other employees.
    g. In utilizing this exception, there have been no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

2. The ECPs shall contain the following information:
    a. Identification of the machine, equipment, or facility.
    b. Listing of all required energy isolating devices, the magnitude of each hazardous energy source and its location.
    c. Specific procedural steps for shutting down, isolating, blocking, securing, and relieving stored or residual hazardous energy.
    d. Specific procedural steps for placement of lockout devices.
    e. Specific requirements that isolation, de-energization and verification have been accomplished.
    f. Specific steps for removal of lockout devices.
    g. A development, validation, and revision date.
    h. Employee signature section acknowledging energy sources identified and isolated.

3. Equipment specific ECP's shall be printed from Maximo and brought into the field for review prior to use.

4. During LOTO, the ECP shall be posted and available at the jobsite for the duration of the repair, servicing, maintenance, or construction activities.

5. The Authorized Employee(s) shall sign and acknowledge the ECP. The ECP will be field verified for accuracy and completeness during the first use and periodically thereafter.

B. Procedure Management

1. Equipment specific ECPs, if available, will be attached to Maximo work orders that require LOTO.

2. The Crew Leader (or designee) will print the available ECP for verification in the field with the PAE. The Crew Leader and PAE will verify the available ECP is accurate. The ECP shall be hand marked in the field if conditions do not match or if the scope of work requires a modified isolation. The PAE and Crew Leader may determine that creating an entirely new ECP is warranted.

3. If an ECP is not attached to the Maximo work order, one shall be developed by the PAE and Crew Leader using a blank ECP template. The ECP can also be developed in Maximo from the Safety Plan tab. Draft ECPs must always be reviewed by another Authorized Employee familiar with the scope of work and equipment.

4. Once the work is complete, the Crew Leader (or designee) will scan and attach the field verified ECP with signatures to the Maximo work order. In cases where a Crew Leader is not established (e.g., Contractor work), the PAE will be responsible for completing this step.

5. The Crew Leader (or designee) shall complete a Maximo LOTO Log to revise an existing ECP for future use or for the adoption of a new ECP. In cases where a Crew Leader is not established (e.g., Contractor work), the PAE will be responsible for completing this

step. Adequate detail shall be provided in the LOTO Log regarding the requested changes.

6. The approval or denial for ECP revision or adoption will be provided by the responsible Supervisor. If approved, the ECP request will workflow to the responsible Maintenance Specialist for incorporation.

XII. Authorized Employee or Contractor Unavailable to Unlock

A. When the Authorized Employee who applied the lock and tag is not available to remove it, the following must be performed:

1. The Authorized Employee's supervisor shall be contacted to discuss the need for lock removal.

2. The Authorized Employee's supervisor or designee will make all reasonable efforts to contact the employee and determine whether the employee is onsite.

   a. If the employee is onsite, the employee must return to the work area to remove their locks. The employee shall communicate with the PAE potential impacts from lock removal if any are posed. For example, a segment of pipe was removed for repair and has not been replaced.

   b. If the employee is off site and communication is established, the employee shall be verbally notified that the locks will be removed. The employee shall communicate potential impacts from lock removal if any are posed. The employee's supervisor or designee will communicate these impacts directly to the requesting OC San PAE.

   c. If the employee is off site and communication is not established, the employee's supervisor or designee can give authorization for lock removal only after it has been verified that the equipment is safe for re-energization.

3. The employee whose LOTO devices were removed must be notified immediately upon their return to work or before the Authorized Employee resumes field work.

4. Prior to device removal, a physical inspection of the machine, equipment or facility shall be performed in accordance with Step 7 of the LOTO sequence.

5. The Hazardous Energy Control Device Removal Notification form must be completed prior to the removal of the LOTO devices. The form must be submitted to Risk Management and the employee whose locks/tags were removed.

6. The Authorized Employee's supervisor shall return to the Authorized Employee their lock(s) regardless of condition.

B. When the Contractor employee who applied the lock and tag is not available to remove it, the following must be performed:

1. The OC San PAE will contact the OC San project team (e.g., Inspector, Project Manager, Engineer), who in turn will notify the Contractor Superintendent or Foreman regarding the need for lock removal.

2. The Contractor Superintendent or Foreman will make all reasonable efforts to contact the Contractor employee and determine whether the employee is onsite.

a. If the Contractor employee is onsite, the Contractor employee must return to the work area to remove their locks. The Contractor employee shall communicate with the OC San PAE potential impacts from lock removal, if any are posed.

b. If the Contractor employee is off site and communication is established, the Contractor employee shall be verbally notified that the locks will be removed. The Contractor employee shall communicate potential impacts from lock removal if any are posed. The Contractor Superintendent or Foreman will communicate these impacts directly to the requesting OC San PAE.

c. If the employee is off site and communication is not established, the Contractor Superintendent or Foreman can give authorization for lock removal only after it has been verified that the equipment is safe for re-energization.

3. The Contractor shall provide written (e.g., lock removal form equivalent or email) approval to OC San prior to removal of the Contractor employee lock.

4. Prior to device removal, a physical inspection of the machine, equipment or facility shall be performed in accordance with Step 7 of the LOTO sequence.

5. The Contractor employee whose LOTO devices were removed must be notified before the Contractor employee resumes field work.

XIII. Periodic Inspections/Audits

A. Authorized Employees shall perform periodic inspections or audits at least annually to verify the ECPs are adequate and being properly applied. The periodic inspections do not have to be by the employees from the same Division or crew, or by Authorized Employees involved in the work. Inspection records shall be maintained for a period of two years.

B. The Control of Hazardous Energy Periodic Inspection form will be used to document this activity. The purpose of the audits is to insure the following:

1. Ensure that Authorized Employees are implementing ECPs properly and are familiar with their responsibilities under those procedures.

2. Ensure that Authorized Employees have access to and are equipped with the necessary lockout equipment, personal protective equipment, and verify correct and safe energy isolation.

3. Ensure that any deviations observed in the application of the lockout device(s) and/or energy control procedures are immediately corrected.

4. The audits are designed to correct any deviations or inadequacies observed, as well as determine if retraining is required.

XIV. Training

A. Affected Employee Training

1. All non-authorized or Affected Employees must complete online training. The training topics will include the purpose, function, and restrictions of OC San's Control of Hazardous Energy Program.

2. Affected Employees will be trained on their responsibilities under the program. The employees will be able to recognize energy isolation device(s), lockout device(s), and tagout device(s), and the importance of not attempting to start up or use equipment involved in an active hazardous energy control application.

B. Authorized Employee Training

1. Initial and annual refresher training is mandatory for those employees whose job duties require them to perform as an Authorized Employee. The training is scheduled and provided by Risk Management.

2. Retraining shall be provided for all Authorized Employees when there is a change in machines, equipment and/or facilities that present new hazards, when there is a change in regulations or when an audit reveals inadequate or inconsistent control of hazardous energy by an Authorized Employee(s).

3. Training shall include review of the following:
    a. The requirements of this procedure.
    b. Recognition of hazardous energy sources.
    c. Each authorized employee shall be instructed in the purpose and use of the energy control procedure.
    d. The type and magnitude of energy at the OC San.
    e. Methods for isolation and control of the energy.
    f. Hazards related to performing activities required for cleaning, repairing, servicing, setting-up and adjusting prime movers, machinery, and equipment.
    g. Energy control procedures.
    h. Energy isolating devices, lockout and tagout devices.
    i. Limitations of tags as energy control device(s).
    j. Include audit findings, action items from incidents reported, or changes made to the program.
    k. Applicable manufacturer’s documentation, industry best practices, regulatory requirements.

4. Annual training requires a passing score of 80% to retain authorized status. Employees who fail the test will be classified as non-authorized and will be required to attend a subsequent Control of Hazardous Energy training course to be reinstated as authorized. Training shall be documented.

XV. Exceptions

A lockout or tagout device is not required for work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energizing or startup of the equipment is controlled by unplugging of the equipment from the energy source, and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

In situations where testing and/or repositioning of machinery or equipment is required to accomplish the service or maintenance objectives, Authorized and Affected Employees shall

follow all procedures set forth in this document as well as the hazardous energy control procedures for removal and application of all hazardous energy control device(s) and/or lockout device(s) as well as Safety-SOP-120 Machine Guarding.

LOTO is not required for hot tap operations involving transmission and distribution systems for substances such as gas, steam, water, or petroleum products when they are performed on pressurized pipelines, if it is demonstrated that:

1. Continuity of service is essential.

2. Shutdown of the system is impractical.

3. Documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

XVI. References

ANSI/ASSE Z244.1-2016, The Control of Hazardous Energy Lock Out, Tag Out and Alternative Methods.

Federal Register, Vol. 54, No. 169, September 1, 1989, page 36644-36683

Injury and Illness Prevention Program

SOP-120, Machine Guarding

SOP-205, Electrical Safety

SOP-608, Contractor Safety

Title 23, California Code of Regulations, Section 3670.1, Certification Requirements for Operating Wastewater Treatment Plants

Title 29, Code of Federal Regulations, Standard 1910.147, The Control of Hazardous Energy (lockout/tagout)

Title 29, CFR, Subpart S, Standard 1910.333, Selection and Use of Work Practices

Title 29, CFR, Subpart K, Standard 1926.417, Lockout and Tagging of Circuits

Title 29, CFR, Subpart Q, Standard 1926.702, Requirements for Equipment and Tools

XVII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XVIII. Revision History

Version	Date	By	Reason
1.0	-	-	New
2.0	01/6/2015	Collins, Rod	Clarify lock-on duration; require Operations approval of shutdowns; include language for control of hazardous stored energy.
3.0	1/31/2019	Frattali, John	Removed gold out-of-service locks from program; changed lock-on duration to end of job.
4.0	1/13/2020	Frattali, John	Established and defined roles for Primary Authorized Employee (PAE) and Crew Leader; provided procedure on Group LOTO mechanisms and application; provided procedure on updating energy control procedures electronically; revised audit frequency to annual.
4.0	10/19/2020	Frattali, John	Periodic Update and Review – Refer to Program Change Log
5.0	12/13/2021	Lam, Brian	Annual Program Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-607 (Ver. 4) Hazard Communication
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of Orange County Sanitation District (OC SAN) Hazard Communication Program is to establish methods to inform and educate employees on chemical hazards in the workplace.

This program applies to all OC SAN employees, contract employees, contractors, and visitors involved in the purchase, use, or storage of hazardous materials/substances.

This program is based on a simple concept, that employees have both a need and a right to know and understand the hazards and the identities of the chemicals they are exposed to in the workplace. By making job-specific hazard information available to employers and employees, and implementing recommended precautions for safe use, the result will be a reduction in illnesses and injuries caused by chemical exposure.

II. Background

OC SAN will reduce the use of hazardous products whenever feasible. Any hazardous product being considered for use shall be evaluated to ensure it is appropriate and the safest viable alternative for the intended use.

The *Globally Harmonized System of Labelling and Classification of Chemicals* (GHS) provisions to Federal OSHA's Hazard Communication Standard (CFR 1910.1200) and California OSHA's Hazard Communication Standard (Title 8 CCR Section 5194) are included in this policy.

III. Definitions

Action Level: concentration designated in 29 CFR part 1910 for a specific substance, calculated as an eight (8)-hour time-weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance.

Acute Toxicity: adverse effects resulting from a single exposure to a substance.
Carcinogen: A chemical substance or a mixture of chemical substances which induce cancer or increase its incidence.

Chemical: Any compound, mixture or solution that may be hazardous by virtue of its properties.

Container: Any bag, barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, tank truck, or the like that contains a hazardous substance. For purposes of this document, pipes and piping are not considered to be containers.

Designated Representative: Any individual or organization to which an employee gives written authorization to exercise such employee's rights.

Explosives: A solid or liquid which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.

Eye Irritation: Application of a substance to the surface of the eye and the effects are fully reversible within 21 days of application.

Flammable Aerosols: Any flammable gas compressed, liquefied, or dissolved under pressure within a non-refillable container.

Flammable Gas: A gas that can catch fire.

Flammable Liquid: A liquid that can catch fire.

Flammable Solid: A solid that is readily combustible or may cause or contribute to fire through friction.

Gas: A substance or mixture which at 50°C has a vapor pressure greater than 300 kPa; or is completely gaseous at 20°C and a standard pressure of 101.3 kPa.

Gases Under Pressure: Gases that are contained in a receptacle at a pressure not less than 280 Pa at 20 C as a refrigerated liquid.

Globally Harmonized System of Classification and Labeling of Chemicals (GHS): A system for standardizing and harmonizing the classification and labelling of chemicals worldwide. GHS is a modification to OSHA's Hazard Communication Standard.

Hazardous Materials/Substances: Any material which is a physical hazard or a health hazard or is included in the List of Hazardous Substances prepared by the California Department of Industrial Relations.

Hazard Not Otherwise Classified (HNOC): adverse physical or health effect identified through evaluation of scientific evidence during the classification. process that does not meet the specified criteria for the physical and health hazard classes.

Hazard Warnings: Any words, pictures, symbols, or combination thereof, appearing on a label or other appropriate form of warning which convey the health hazards and physical hazards of the substance(s) in the container(s).

Health Hazard: The term "health hazard" includes substance which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, or any other agents which cause health effects.

Label: Any written, printed, or graphic material displayed on or affixed to containers of hazardous substances.

Liquid: A substance or mixture that is not a gas and which has a melting point or initial melting point of 20°C or less at standard pressure of 101.3 kPa.

Manufacturer: Any person who produces, synthesizes, extracts, or otherwise makes a hazardous substance.

Mixture: A combination or solution composed of two or more substances in which they do not react.

National Institute of Occupational Health and Safety (NIOSH): NIOSH is responsible for conducting research and making recommendations for the prevention of work-related injury and illness.

Organic Peroxides: An organic liquid or solid that may be liable to explosive decomposition, rapid burning, sensitivity to impact or friction, dangerously reaction with other substances.

Oxidizing Gas: Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

Oxidizing Liquids: A liquid which, while not necessarily combustible, may cause or contribute to the combustion of another material.

Physical Hazard: a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water reactive.

Pyrophoric Liquids and Solids: A liquid or solid which, even in small quantities, is liable to ignite within 5 minutes after encountering air.

Reproductive Toxicity: Includes adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in offspring.

Safety Data Sheets (SDS): Formerly referred to as MSDS, a SDS is the GHS-formatted written or printed material issued by the manufacturer concerning a hazardous substance.

Self-Heating Substance: A solid or liquid which, by reaction with air and without energy supply, is liable to self-heat.

Self-Reactive Substances: Thermally unstable liquids or solids liable to undergo a strongly exothermic thermal decomposition even without participation of oxygen.

Skin Sensitization: A substance that will induce an allergic response following skin contact.

Solid: A substance or mixture that does not meet the definitions of a liquid or a gas.

III. Responsibilities

A. Risk Management Division:

1. Developing a written Program that will comply with the updated requirements of CFR 1910.1200 and T8 CCR, Section 5194.

2. Evaluating and approving all SDS for chemicals prior to purchase.

3. Evaluating all SDS related to contract work. Managing OC SAN's electronic SDS database and inventory listing of all chemicals at OC San.

4. Maintaining SDS in accordance with the OC SAN records retention protocol.

5. Providing secondary container label guidance to all employees.

6. Providing training in accordance with the provisions of this program.

7. Conducting program administration/review in accordance with the provisions of this program.

B. Purchasing and Warehouse Division

1. Selecting vendors and establishing contracts or purchase orders to procure chemicals.

2. Procuring only those chemicals for which an approved SDS is on file with the Risk Management Division.

3. Ensuring all packages are labeled at the time of delivery and free from any damage or leaking.

C. Supervisors

1. Ensuring an approved SDS is in the SDS database prior to submitting a procurement request of procuring the material.

2. Ensuring appropriate PPE, as recommended by the SDS, is available for use by the employees.

3. Ensuring employees have access to SDS during working hours.

4. Ensuring employees receive training on the hazardous materials they work with or to which they may be exposed.

5. Conducting inspections of hazardous materials storage areas for leaking or damaged containers.

6. Ensuring hazardous materials storage areas for projects they are coordinating and/or overseeing meet all applicable regulatory and OC SAN requirements.

7. Ensuring all drums are placed on containment pallets; all drums are to be labeled with contents or marked as empty.

D. Environmental Service Laboratories

1. The Environmental Service Laboratories work under an operating philosophy that requires laboratory staff to perform their duties safely, in compliance with Cal/OSHA regulations/OC SAN policy and within the standard of good laboratory practice.

2. All laboratory work performed by OC SAN staff and contractors shall be done within the requirements of the Laboratory Safety and Chemical Hygiene Program.

E. Contractors, Consultants

1. Shall not bring hazardous materials onto any OC SAN facility without approval from Risk Management.

2. The contractor submits all SDS, related the scope of work, to the Risk Management Division as a submittal for the project.

3. Confirm that all project specific SDS have been submitted and approved.

4. Store and label chemicals per GHS.

5. Participate in the safety orientation with Risk Management prior to the start of the project. Any information or use conditions to be shared will the contractor employees and subcontractors, as appropriate.

6. Inform OC SAN if a new or alternate hazardous material/substance is required for completion of the project. An SDS must be submitted to the Risk Management Division prior to bringing it onto the job site.

7. Include all subcontractor chemicals in the SDS submittal.

IV. Chemical Evaluation and Procurement

A. Product Evaluation

1. An effective hazard communication program includes mechanisms for evaluating hazardous substance(s)/material(s).

2. All product(s) containing a hazardous substance must be evaluated and approved by Risk Management and Resource Protection divisions prior to receipt at an OC SAN facility.

3. Divisions requesting use of any applicable chemical/product shall:
   a) Obtain the SDS from the manufacturer and/or distributor (see Procurement section below).
   b) Submit the SDS, via the online New Chemical Request Form process.

B. Product Procurement

1. Each division is responsible for complying with the requirements of this policy before purchasing a new hazardous product or when a sample product is received.

2. To determine if a product has an SDS, the affected division can look up the product on the current online SDS system (Risk Management page).

3. No procurement shall take place until confirmation that the product has been approved by Risk Management and the SDS is on file.

4. If the requestor submits a copy of the SDS approval form with the purchase order, the Purchasing Division may proceed with the procurement of that product.

5. Upon receipt of any hazardous chemical to the warehouse, staff shall ensure that each package is labeled, and the label is readable at the time of delivery, and each package is not damaged and/or leaking.

V. Employee Training

A. The Risk Management Division is responsible for establishing the training curricula and frequency, and for determining the appropriate training media(s) which will be used for the Hazard Communication program.

B. The Sanitation District's SOP-111 contains training requirements for access to medical records to include annual training for the existence, location, and availability of records the person responsible for maintaining records and employee's right to access the records.

C. Periodically, employees are required to perform hazardous non-routine tasks.

D. Prior to initiating such work, affected employees shall be given information, by the applicable division supervisor(s), about the hazards to which they may be exposed.

E. If appropriate, the affected employees shall receive additional training to prepare them for these tasks. The responsible supervisor(s) shall inform the Risk Management Division to cooperatively coordinate the training.

F. Routine hazard communication training curricula shall minimally have the following elements:

1. The requirements of the hazard communication regulation including employee rights (e.g., employees receiving and sharing with their physician information on hazardous chemicals to which they may be exposed).

2. The location Hazard Communication program, inventory of hazardous chemicals, and SDS information.

3. Identification of hazardous chemicals present in employees work area.

4. How to detect the presence or release of hazardous substances.

5. The physical and health hazards of hazardous substances in the work area and ways for employees to protect themselves from exposure.

6. How to read and understand the GHS classification.

7. How to read and understand the GHS labels received on shipped containers, the workplace labeling system, safety data sheets, and how employees can obtain and use the hazard information.

8. How to review the SDS and obtain appropriate chemical health and safety information.

G. Employee training records are maintained by the Risk Management Division. These records shall be kept indefinitely.

H. Employee training on new or revised SDS information must be provided within 30 days of the employer receiving that information.

VI. Hazard Classification

A. Classification is the starting point for hazard communication. It involves the identification of the hazard(s) of a chemical, solution, or mixture. Employees should be familiar with the modified criteria for hazard classification of chemical hazards under the GHS.

B. The GHS uses the term "hazard classification" to indicate that only the intrinsic hazardous properties of substances or mixtures are considered.

C. The data used for classification may be obtained from tests, literature, and practical experience.

VII. Container Labelling

A. All labels shall be clearly visible, readable, and printed in English.

B. All chemical containers shall have labels including the following information:

1. Symbols (hazard pictograms): health, physical and environmental hazard information.

2. Signal Words: Indicates the relative degree of severity for any given hazard. The signal words used in the GHS are danger for the more severe hazards and warning for the less severe hazards.

3. Hazard Statements: Standardized statements and assigned phrases that describe the hazard(s) as determined by hazard classification.

4. Precautionary Statements: Aimed at minimizing or preventing any adverse effects of exposure.

5. Product Identifier (ingredient disclosure): Name or number that is used for a hazardous product on a label or in the SDS.

6. Personal Protective Equipment:

C. No container shall be released for use or transport unless it is properly labeled.

D. Manufacturer’s labels shall not be intentionally removed or defaced in any way. In the event a label is in an unusable condition, the affected employee(s) shall immediately re-label the container per Hazard Communication requirements.

E. OC SAN issued containers that are not originally issued by the manufacturer shall also be properly labeled prior to use or transport. Labels for secondary containers can be obtained from the Risk Management Division. Each employee transferring a hazardous material/substance to a secondary container is responsible for obtaining the proper label for that container.

F. Piping is not considered to be a container. However, due to the nature of our industry, piping containing any chemical/substance related to wastewater treatment process shall be properly labeled.

1. Above-ground pipes transporting hazardous substances (gases, vapors, liquids, semi- liquids, or plastics) shall be identified in accordance with Section 3321.

2. Where identification is required for piping systems, one or more of the following methods shall be employed.

   a) Complete color painting of all visible parts of the pipe.

   b) Color bands, preferably 8 to 10 inches wide, at various intervals and at each outlet valve or connection. Where identification is provided by complete color painting or by color bands, a color code shall be posted at those locations where confusion would introduce hazards to employees.

   c) The names of or abbreviations of the names of the materials transported shall be lettered or stenciled on the pipe near the valves or outlets.

   d) Tags of metal or other suitable material naming the material transported shall be fastened securely to the system on or near the valve. Tag legibility shall be maintained.

G. Proposition 65: Hazardous chemical containers from out of state chemical manufacturers or distributors (who are not subject to Proposition 65) may not have Proposition 65 hazard warnings. California's suppliers/employers must meet the requirement in various ways, including affixing additional Proposition 65 warning labels on containers or posting signs in the workplace. Under Proposition 65, warnings are required for:

1. Consumer product exposures.

2. Occupational exposures.

3. Environmental exposures. Warnings for exposure in the workplace can be communicated by one or a combination of the following:

4. A warning on a product label.

5. A warning or sign posted conspicuously in the workplace.

6. A warning that complies with the federal OSHA Hazard Communication regulation (29 CFR, section 1910.1200), the California Hazard Communication regulation (section 5194), the Pesticides Worker Safety requirements (T3 CCR, Ch. 6, Sub-chapter 3, Group 3, section 6700).

IX. Safety Data Sheets (SDS)

A. Every hazardous material/substance used or stored by or for OC SAN must have a current and corresponding safety data sheet (SDS). All SDS shall be available to all employees through use of the online system.

B. Safety Data Sheets (SDS) alert employers of potential hazards associated with a particular substance and provide information for response in case of an emergency.

The GHS changes the terminology from Material Safety Data Sheet (MSDS) to Safety Data Sheet (SDS). The GHS SDS format includes 16 sections outlined below.

1. Product & Company Identification
2. Hazard Identification
3. Composition / Information on Ingredients
4. First-Aid Measures
5. Fire-Fighting Measures
6. Accidental Release Measures
7. Handling and Storage
8. Exposure Controls/Personal Protection
9. Physical and Chemical Properties
10. Stability and Reactivity
11. Toxicological Information
12. Ecological Information
13. Disposal Considerations
14. Transport Information
15. Regulatory Information
16. Other Information

C. Each SDS must be clearly readable and printed in English. If any of the required information on the SDS is not attainable, it should be noted on the Safety Data Sheet Approval Form and submitted to the Risk Management Division for corrective action. At the completion of any corrective action, the requestor shall receive written confirmation back from the Risk Management Division.

D. All applicable SDS's are housed in an electronic database (vendor provided) managed by the Risk Management Division.

E. The Risk Management Division update the database continuously to ensure it is current. Staff shall immediately notify the Risk Management Division if a desired SDS is not available on the database. In the event an employee's designated representative, Cal/OSHA, NIOSH and/or an employee's physician(s) require an SDS, a written request shall be issued to the Risk Management Division for completion.

F. Within Environmental Science Laboratories (ESL), where complex mixtures have similar hazards and contents (i.e., the chemical ingredients are essentially the

same, but the specific composition varies from mixture to mixture), one SDS may be provided to apply to all these similar mixtures. In this case, the SDS must still be received and submitted to the Risk Management Division for approval as previously outlined in this document.

G. The Risk Management Division will maintain an inventory listing of all chemicals and SDS's used throughout OC SAN. This list shall be continually updated as new SDS's are obtained.

VIII. Program Administration/Evaluation

A. The Hazard Communication Program shall be managed and administered by the Risk Management Division. This Hazard Communication Program shall be evaluated as needed to ensure that it is effective. Program shall be evaluated and updated as Risk Management becomes aware of the need.

B. The program evaluation conducted by the Risk Management Division shall include the following steps:

1. Determine if regulations, national consensus standards and/or OC SAN policy/procedures have changed since the last program review.

2. Revise the Hazard Communication program as necessary to reflect any regulatory, national consensus standards, and/or OC SAN policy/procedures changes referenced above.

IX. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC SAN Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

Safety data sheets shall be retained as necessary to comply with the provisions of section 5194. Where safety data sheets are destroyed, a record of the identity (chemical name if known) of the substance or agent, where it was used, and when it was used shall be retained for at least thirty years; and 3. Section 3204(c)(5)(D) records concerning the identity of a substance or agent need not be retained for any specified period as long as some record of the identity (chemical name if known) of the substance or agent, where it was used, and when it was used is retained for at least thirty years.

X. Reference

Laboratory Chemical Hygiene Program

Injury and Illness Prevention Program

SOP-608, Contractor Safety Programs

Title 8, California Code of Regulations, Section 5194, Hazard Communication

Title 8, California Code of Regulations, Section 3204, Access to Employee Exposure and Medical Records

Title 8, California Code of Regulations, Section 5191, Occupational Exposure to Hazardous Chemicals in Laboratories

OSHA Federal Standard 29 CFR Parts 1910, 1915, 1926, Hazard Communication

XI. Revision History

Version	Date	By	Reason
1	9/14/2009	SW	
2	5/11/2015	PC	GHS revisions included
3	06/22/2020	Hachim, Sabrina	Periodic Update – Refer to Program Change Log
4.0	12/13/2021	Frattali, John	Annual Program Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-608 (Ver. 5) Contractor Safety Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

A. The Contractor Safety Program reflects the determination of the Orange County Sanitation District (OC San) to prevent injuries to persons and or loss or damage to property and equipment during construction and maintenance activities contracted by OC San.

B. It is an integral part of the OC San's Vision statement that OC San will be a leader in creating the best possible workforce in terms of safety, productivity, customer service, and training. OC San expects the support of consultants, contractors, vendors, and others doing business with OC San in attaining this aspect of our Vision.

C. OC San considers no work to be of greater importance than injury and loss prevention. Incidents resulting in personal injury to employees or the public, damage to property or equipment, or the theft or vandalism or property or equipment represent needless waste and loss. It is the policy of OC San to conduct construction operations safely and securely, thereby preventing injuries and property damage losses.

D. To help ensure this outcome, OC San has an oversight and management system in place for contractors that is intended to drive improvement in contractor safety and health and ensure contractors' employees are provided effective protection. This program identifies and defines the roles and responsibilities of OC San departments, employees, as well as OC San Contractors and their employees to assure that safety and risk reduction principles are effectively applied to maintenance and construction projects. The program also strives to achieve the following:

   1. Address safety and health considerations during the process of selecting contractors and when contractors are on-site.

   2. Include provisions for timely identification, correction, and tracking of uncontrolled hazards in contractor work areas.

   3. Include provisions to ensure contractors follow site safety and health rules.

E. Contractors will be encouraged to develop and operate an effective safety and health management system and to adhere to the following safety principles:

   1. Safety is everyone's responsibility.

   2. All employees are required to observe safe work practices.

3. Effective training is essential for good safety and security performance.

4. Management is accountable for providing a safe work environment.

II. Background

A. OC San is unwavering in its commitment to the safety and wellbeing of its employees, Contractors, the surrounding community, and the environment. Contractors working on OC San projects are always expected to reflect this commitment to safety by complying with OC San Contractor Safety Standards and by providing their employees with a comprehensive and effective safety program.

B. Planning for safety shall start with design and continue through purchasing, fabrication, and construction. All practical steps shall be taken to maintain a safe and secure place of employment. Contractors shall be responsible for the prevention of incidents and injuries on any work under their direction and shall be responsible for the thorough safety and loss control training and instruction of their employees.

C. Contractors working on OC San projects are responsible for implementing the applicable safety precautions and programs identified in the contract documents, OC San Contractor Safety Standards, as well as federal, state, and local regulations. The role of OC San will be to monitor and document Contractor compliance with contractual safety requirements, notify the Contractor when non-compliant activities or conditions are discovered and document the Contractor's corrective actions. OC San will advise the Contractors of known risks associated with our processes; however, the Contractor is ultimately responsible for identifying and controlling the hazards in, around and near their employee's work areas.

III. Scope and Application

A. This Policy applies to any OC San employee who secures the services of a Contractor licensed by the California Contractors State Licensing Board for the purpose of:

1. Construction, alteration, painting, repairing, construction maintenance, renovation, removal, excavations, or wrecking of any fixed structure or its parts.

2. Remodeling repair or maintenance of OC San facilities (including but not limited to structures & equipment)

B. This Policy is not intended to apply to low hazard contract service work such as the fire extinguisher inspection and replacement, re-stocking of first aid kits, etc.

IV. Definitions

A. **Bureau of Labor Statistics (BLS):** The U.S. Bureau responsible for tracking workplace injuries/illnesses & fatalities as required by the OSH Act. The BLS injuries, illnesses, and fatalities (IIF) program provides annual information on the rate and number of work-related injuries, illnesses, and fatalities, and how these statistics vary by incident, industry, geography, occupation, and other characteristics.

B. **BLS Incidence Rate(s):** An Incidence Rate is calculated by using the formula: (Number of incidents X 200,000) / Employee hours worked = Incidence rate. A

Contractor's Incidence Rate can then be compared to other firms doing the same type of work utilizing the BLS annually published data. Common incident types, as defined by the BLS include 'Recordable Cases', 'DART Cases' and 'Fatal Cases'. (Refer to CCR T8 Sections 14000-14400 for complete details & criteria).

1. Days Away, Restricted, and/or Transfer Case Incidence Rate (DART rate): The rate of all injuries and illnesses resulting in days away from work, restricted work activity, and/or job transfer. This rate is calculated for an individual worksite, or all worksites of a contractor for a specified period (usually one to three years).

2. Total Case Incidence Rate (TCIR). As called Total Recordable Incident Rate. A number that represents the total nonfatal recordable injuries and illnesses per 100 full-time employees, calculated for a worksite for a specified period (usually one to three years)

C. **Contract:** Any written agreement between OC San and a licensed contractor, to perform a specified scope of work on OC San facilities.

D. **Contractor:** The individual, partnership, corporation, joint venture, or other legal entity having a Contract to perform work for OC San. This term also includes subcontractors of any tier to the Contractor and the associated employees of each contractor.

1. General Contractor. A construction site owner or site manager who controls construction operations and has contract responsibility for assuring safe and healthful working conditions at a worksite.

2. Applicable Contractor. A contractor whose employees worked at least 1,000 hours at an OC San work site in any calendar quarter within the last 12 months and are not directly supervised by OC San.

3. Resident Contractor. A Resident Contractor is a company that provides ongoing, long-term, on-site services to OC San at a specific site, and occupies recognizable, delineated work areas within the site.

E. **Contractor Safety Orientation (CSO):** A briefing to orient the Contractor to known general and specific hazards at the work location, identify OC San expectations for safety performance, review emergency notification capabilities, and discuss Contractor activities that may pose a hazard to OC San employees, members of the public and other Contractors.

F. **Experience Modification Rate:** Issued by the WCIRB, it is a percentage value derived from comparing the payroll and loss history of a company to those of similar-sized companies in the same industry. It is a calculation of the actual payroll and losses reported by the insurer for rolling (3) three consecutive policy years period. The 'base premium' value is typically multiplied by this number to arrive at the actual premium to be paid by the entity. A value of 100% (or 1.00) indicates that 50% of similar companies had greater loss ratios and 50% of similar companies had lesser loss ratios than the subject company.

G. **Experience Rating Form/Worksheet:** Provides detailed information about the classification codes assigned to a policy, the payroll reported for each of those

classifications, summaries of claim amounts, and the experience modification as issued by the WCIRB.

H. **High Hazard Work:** As defined by OC San Contract Documents, high hazard tasks require formal review and endorsement/authorization of a task specific Construction Work Plan and Job Hazard Analysis including (but may not be limited to):

1. Permit confined space entry
2. Use of an OC San overhead crane
3. Critical lifts
4. Hot Work
5. Control of hazardous energy sources (LOTO)
6. Use of hazardous materials
7. Abatement of hazardous materials
8. Coordination planning for work by multiple contractors in the same area
9. Spray painting, industrial coatings and/or blasting/abrasive work
10. Scaffold erection and use
11. Use of cranes requiring certification or other large mobile equipment
12. Excavations which require ground support systems
13. Fall protection for fall hazards of four (4) feet or greater.
14. Respiratory hazards including dust control
15. Demolition work.
16. Noise hazards

The specific requirements for Contractor submittals when undertaking each type of high hazard work is described in the OC San Contractor Safety Standards or contract documents.

I. **Injury and Illness Prevention Plan (IIPP):** The Injury and Illness Prevention Program (IIPP) is a basic written workplace safety program. Title 8 of the California Code of Regulations (T8CCR) section 3203 contains the program and employer requirements for employers doing business in California.

J. **Job Hazards Analysis (JHA):** Also called Job Safety Analysis or Task Hazard Analysis. An activity specific analysis that is completed by the Contractor for tasks such as confined space entry, hot-work, hazardous materials usage, and other activities as required by the contract documents.

K. **North American Industry Classification System (NAICS)**: Is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

L. **OC San Safety Standards:** This term refers to the Safety Documents that are incorporated into the Contract. During this time of revision and updating, this term includes the OC San Safety Standards, as well as other portions of the contract document that detail Contractor Safety Requirements.

M. **Site Specific Safety Plan (SSSP):** A worksite safety plan that is specific to the project task(s) and condition(s) of the worksite. The plan shall comply with federal, state, and local requirements as well as requirements set forth in the Contract documents.

N. **Workers' Compensation Insurance Rating Bureau (WCIRB):** Objective provider of actuarially based information and research, advisory pure premium rates, and issues experience ratings through an experience rating form or experience rating worksheet.

V. Responsibilities and Roles

A. Mutual Responsibility

1. The departments of Contracts, Purchasing, and Materials Management, Engineering, Maintenance t, and Risk Management shall recognize their mutual responsibility to work together to provide oversight of contractor safety issues to ensure that contract workers are provided equal, high-quality safety and health protection.

B. Contracts, Purchasing, and Materials Management Responsibilities

1. Work with Engineering and Risk Management to ensure Construction Invitation to Bid Documents (including the Bid Submittal Forms, General Requirements and Additional General Requirements) contain the relevant Contractor Safety Requirements specific to the scope of work.

2. Inform Contractor of OC San's safety program elements, general requirements, and site-specific safety guidelines.

3. Ensure Risk Management representative(s) are invited to Pre-Bid, and Pre-Construction meetings.

4. Maintain a list of current contractors that is accessible to Risk Management.

5. Annually obtain the following information for the previous calendar year from each Contractor:

   i. Total number of employees.

   ii. Total hours worked.

   iii. Total number of injury and illness cases.

   iv. Total number of injury and illness cases involving days away, restricted time, or job transfer.

6. Ensure OC San has three previous calendar years of information submitted.

7. Provide Risk Management access to Contractor information requested by February 8th each year.

8. Maintain provisions in the Contract language for removing a contractor or a contractor's employees from the worksite for safety or health violations.

9. Verify that the Contract language contains provisions for the Contractor to address Whistleblower Rights and Anti-Retaliation Protections for their employees.

10. Include Bid submittal requirements developed by Risk Management in Bid Documents to ensure the accurate completion of the Contractor Responsibility Evaluation. For items (8)(b) through (d) below, Bidder will provide a Letter of Explanation for any item which exceeds the OC San standard including any upheld citations. The Letter of Explanation will describe the circumstances in detail and include the Contractor's response plan to prevent future exceedances. Objective Contractor evaluation criteria will include documented and demonstrated safety performance based on the following:

    i. Verification that Contractor written Illness and Injury Prevention Program (IIPP) meets Cal/OSHA standards.

    ii. Verification that bidders Worker's Compensation Experience Modification Factor does not exceed 1.25 during the year prior to the bid date as well as the current policy year.

    iii. Verification that the bidders past three (3) calendar years average BLS incident rates are not larger than 1.25 times the corresponding average BLS industry national incident rates for the bidder's NAICS (North American Industry Classification System) code. Incident rates to be compared include the Recordable Case, DART Case and Fatal Case rates.

    iv. Records of upheld OSHA violations for the past five (5) years.

C. Engineering/Maintenance Specialist Responsibilities

1. Inform Contractor of OC San safety program requirements related to the site and scope of work.

2. Work with Risk Management to ensure clear understanding of project scope and general schedule.

3. Chair Project Safety Committee meetings.

4. Confirm Safety Moment and Safety Agenda item(s) are included in required Project Meetings.

5. Conduct quarterly audits of the Contractor's safety program to ensure compliance with Contract Requirements. If warranted, these audits may need to be conducted more frequently. Notify the Contractor(s) of any observed unsafe actions or hazardous conditions that their employees are exposed to. Document Contractor's corrective and/or controlling actions.

6. Meet monthly with Risk Management and Project Management to discuss construction safety issues and concerns.

7. Ensure that Risk Management is invited to Progress Meetings.

8. Timely communication, in writing, to Engineering Management and Risk Management Division of:

   i. Safety and health related incidents,

   ii. Identified hazards,

   iii. Safety and health concerns.

9. Monitor onsite construction activities to ensure compliance with OC San safety standards.

10. Ensure multi-employer coordination of Safety and Health issues. Coordinate the appropriate high hazard Work Permit(s) with the Risk Management Division.

11. Serve as a resource to project teams who are primarily responsible for assuring that assigned construction projects are implemented safely and as required by contract documents.

12. Review Contractor safety related submittals.

D. OC San Construction Inspectors

1. Work closely with the Construction Safety Inspector to monitor and document safety issues.

2. Notify Risk Management and Resident Engineer/Project Manager of any change(s) or deviation(s) in previously documented scope of work so previous JHA's may be re-evaluated.

3. When possible, participate in the completion of JHAs.

4. Stop work if unsafe work practices or conditions are observed

E. Risk Management Responsibilities

1. General

   i. Develop and maintain a comprehensive Contractor Safety Program.

   ii. Encourage all contractors to develop and operate an effective safety and health management system. Opportunities to do this will be taken advantage of during Contractor Safety Orientations, evaluation of incident investigations and onsite inspections.

   iii. Training. Provide a Contractor Safety Orientation to Contractors that includes awareness of:

      a) How to recognize hazardous conditions they may encounter at the worksite and the signs and symptoms of workplace-related illnesses and injuries.

b) The importance of implementing hazard controls, including safe work procedures.

c) Emergency procedures. Inform all employees of their responsibilities for each type of emergency so they will understand what to do in emergency situations.

iv. Review construction design(s) for safety and health issues.

v. Establish and maintain Contractor safety and health related submittal requirements and respective review criteria.

vi. Verify Contractor and Subcontractor Experience Modification Rates issued by the WCIRB, OSHA Incidence rates for the past three completed calendar years compared to the BLS industry records, and any upheld OSHA violations for the last five years.

vii. Allocate staff to ensure attendance at pre-bid, pre-construction, progress, and construction safety planning meetings, as required.

viii. Allocate staff to attend design review meetings and review project designs and specifications from preliminary design through final design.

ix. Perform a Job Site Safety Orientation prior to work commencing.

x. Establish a program to issue High-Hazard Work Permits.

xi. Verify Contractor's training records and certifications.

xii. Coordinate and/or assist with jobsite safety and health audits.

xiii. Review Contractor safety and health programs including Confined Space Entry, Hot Work, Lock-Out/Tag-Out and other applicable safety programs required by the contract documents, federal and state law, or OC San policy.

xiv. In conjunction with Construction Quality Assurance, track and review Contractor incident reports and corrective actions.

xv. Develop safety training course(s) for personnel who audit or inspect Contractor activities.

xvi. Advise Engineering, Purchasing, and Contracts Administration of unsatisfactory/untimely corrective action(s).

xvii. Interpret applicable regulations and ensure compliance.

xviii. Attend Project Safety Committees meetings.

xix. Attend Pre-Bid, Pre-Construction, and Progress Meetings, as needed or required.

xx. Work with Engineering to ensure the contract is Cal/OSHA compliant.

xxi. Maintain contractor injury and safety related records and annually prepare and submit a summary (Table B of Appendix A) to Cal/VPP.

xxii. Provide oversight to ensure that all contractors and subcontractors follow worksite safety and health rules and procedures applicable to their activities while at the site.

xxiii. Work site inspection, documentation and follow through. Risk Management takes lead with day-to-day work site inspection, documentation, safe construction work planning, review of incidents and tracking of resolutions.

CSO, SSSP Contracts or Engineering obtains contractor safety training records and SSSP, Engineering and Risk Management reviews and comments, Risk Management reviews incidents and oversees implementation.

2. Risk Management Construction Safety Inspector (Dedicated Safety and Health Professional)
    i. Monitor onsite construction activities to ensure compliance with OC San safety requirements as well as applicable state and federal regulations.
    ii. Serve as a resource to project teams who are responsible for assuring that assigned projects are implemented safely and as required by contract documents.
    iii. Review Contractor safety related submittals.
    iv. Issue high hazard permits.
    v. Conduct safety audits as required.
    vi. Investigate construction incidents and accidents.
    vii. Attend Project Safety Committee meetings.
    viii. Stop work if unsafe work practices or conditions are observed.
    ix. Ensure implementation of Contractor Corrective Action Plans.

3. Risk Management Safety and Health Representatives
    i. Provide support to the Project Team.
    ii. Conduct Contractor and Subcontractor bidder evaluation(s).
    iii. Maintain a project specific history log of contractor and subcontractor bid evaluations.
    iv. Support in the determination of hazardous waste(s) and coordinate disposal.
    v. Coordinate any Industrial Hygiene sampling, testing, and/or exposure monitoring for projects as required by the contract documents.
    vi. Provide Safety and Health training for staff.
    vii. Maintain safety records.
    viii. Evaluate Safety and Health Program effectiveness.
    ix. Issue high hazard work permits.
    x. Conduct Site Safety Audits as needed.
    xi. Review Contractor Safety Plans.
    xii. Conduct Contractor Safety Orientation’s with Contractor(s) and subcontractor(s) prior to work commencing and when the scope of work deviates from the original analysis or worksite conditions change. Provide materials and training to the Contractor’s Lead Safety Representative to allow additional CSO sessions as required.
    xiii. Review Contractor JHA’s and monitor field implementation.
    xiv. Evaluate new Subcontractors not previously listed in contract to ensure compliance with OC San evaluation criteria.

xv. Stop work if unsafe work practices or conditions are observed.

F. Maintenance and Operation Staff (Construction Coordinators) Responsibilities

1. Attend Pre-Construction Meetings to discuss safety related issues with an emphasis on their impact on Operations and Maintenance activities.

2. Work with Engineering, Purchasing, and Contracts divisions to ensure a clear understanding of the scope of work and to ensure that Operations and Maintenance staff can complete tasks safely if required to work in or around any project/construction area.

3. Work with Engineering, Construction Inspector(s), and/or Maintenance Specialists to ensure that OC San policies, procedures and applicable regulations are followed for the control of hazardous energy.

4. Confirm high hazard work permits have been submitted and approved for the work.

5. Verify systems are de-energized, hazardous energy sources have been isolated, and that controls are in place to prevent the re-accumulation of energy or inadvertent startup of equipment.

6. Ensure proper procedures and policies are followed when equipment is ready to be re-energized and put back into service.

7. Attend weekly progress meetings to discuss any concerns from Operations and Maintenance staff.

8. Notify the Risk Management, Construction Inspector or Maintenance Specialist of any safety issues observed at the project site.

G. Contractor Responsibilities and Roles

1. Contractor Responsibilities

i. Initiate, maintain, supervise, and enforce safety precautions and programs in connection with the performance of the contract for the safety of its Employees, its Subcontractors, OC San staff, the public, and the work site in general.

ii. Comply with the most stringent of the following:

a) Contractor’s IIPP or related submitted and approved task specific programs (e.g., Fall Protection, LOTO).

b) Applicable Cal/OSHA (Title 8) and Federal OSHA (Code of Federal Regulations, Title 29) Standards and Safety Orders.

c) Applicable OC San Policies.

d) Contract Documents.

e) Other applicable federal, state, and local regulations.

f) OC San Safety Standards.

g) Applicable consensus standards, including ANSI, NFPA, etc., as specified in contract documents.

iii. Develop and maintain a Construction Safety Plan or Site-Specific Safety Program as required in contract documents and applicable OC San Safety Standards.

iv. Staff project with a Competent Safety Professional as required by the contract.

v. Notify Engineering and Inspection of any new subcontractor brought on site and submit required documents as noted in bid documents for evaluation by Risk Management.

vi. Identify and correct unsafe work conditions.

vii. Participate in completing a Job Site Safety Orientation and any Job Hazard Analyses as required for high hazard activities including confined space entry and hot work.

viii. Notify Engineer promptly of all injuries, property damage (regardless of owner), spills, and near misses at the job site.

ix. Training. Managers, supervisors, and non-supervisory employees of contract employers must be made aware of:

a) Hazards they may encounter while on the worksite.

b) How to recognize hazardous conditions and the signs and symptoms of workplace-related illnesses and injuries.

c) Implemented hazard controls, including safe work procedures.

d) Emergency procedures.

e) Whistleblower Rights and Anti-Retaliation Protections.

VI. Procedure

A. Safety Design Review– Risk Management will review the projects design elements with a focus on providing facilities and processes that are inherently safe for employees.

B. Pre-Bid Meetings/Job Walks – Risk Management will present a general overview of OC San's safety program, expectations, contractual requirements, a general overview of the hazards associated with the specific project, and review bid evaluation criteria.

C. Bid Evaluation for Safety Criteria - Risk Management will perform a 'responsibility' evaluation by reviewing the following information submitted by the bidder(s) to measure compliance with the bid requirements:

1. Verification of Contractor Illness and Injury Prevention program elements.

2. Worker's Compensation Experience Modification Factor (compared against information published by the WCIRB).

3. A comparison of the bidders past three (3) complete calendar years and current year's Recordable, and DART case rates to with the corresponding BLS industry statistics for the contractors NAICS code.

4. A comparison of the information submitted by the Contractor with the public database of OSHA violations made within the past (5) five years.

5. This information will be required for each bidder on a Project. When the bidder is a Joint Venture, the information for the Joint Venture as well as each Joint Venture Partner will be submitted with the Bid.

D. Contractors will be prepared to submit this information for any subcontractor completing work equal to 0.5% or greater of the bid value (vendors providing materials or equipment only are exempt). This information must be submitted no more than 5 days after the Notice to Proceed is received and executed. The information shall be submitted to the Resident Engineer and forwarded to the Risk Management.

E. Safety Preconstruction Meeting – Risk Management will present a more in-depth review of OC San safety requirements and expectations including pre-work and other expected submittals.

F. Safety Submittal Reviews – Safety related submittals required by the contract documents will be evaluated by the Risk Management Construction Safety Inspector.

G. Contractor Safety Orientation (CSO) – Before initial work activities begin, a Contractor Safety Orientation must be completed by Risk Management Staff. Attendance is mandatory for the Contractor and highly encouraged for initial subcontractor safety representatives, construction inspectors, and anyone else who can provide insight into the specific hazards of the project.

H. Progress Safety Meetings – During the project, progress meetings will be held by OC San representatives and the Contractor to discuss project progress, safety issues, and other project related concerns.

I. High Hazard Work – OC San requires an additional evaluation by Risk Management and the Senior Construction Inspector (safety). A permit or approved Contractor JHA must be issued prior to the start of work.

J. Safety Audits – Risk Management will schedule safety audits with Engineering staff. The audits will be performed at regular intervals.

VII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/ content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VIII. References

SOP-600, Injury and Illness Prevention Program

Orange County Sanitation District – Safety Standards

Orange County Sanitation District - General Requirements

Title 8 California Code of Regulations

29 CFR Parts 1910 and 1926

The Worker's Compensation Insurance Rating Bureau of California (WCIRB)

The United States Census Bureau

The United States Department of Labor – Bureau of Labor Statistics

IX. Revision History

Version	Date	By	Reason
0	09/27/2006	Jim Matte	New
1	06/18/2012	Wes Bauer	
2	08/25/2014	Heather Davis	Annual review and new template conversion.
3	02/10/2020	Rod Collins	Periodic review
4	07/17/2020	Case Spencer	Periodic Update – Refer to Program Change Log
5	12/13/2021	John Frattali	Annual Program Update – Rebrand Only

Required Annual Submittal of Contractor Injury Illness Rates and Safety Information

One means for evaluating contractor's safety performance is by reviewing their injury illness rates. On February 15 of each year, as part of their continuous improvement efforts, OC San is required to provide the Cal/VPP team with a report detailing their site's contractor safety and health activities with respect to Cal OSHA VPP elements, other safety and health status updates, and progress reviews. Only data from the Bureau of Labor Statistics (BLS) is to be used when determining TCIR and DART industry average rates.

1. Provide required information by completing tables A and B.
    i. Table A must be completed for all applicable Contractors before Table B can be completed.
    ii. Table A is to be completed by providing the required information for the previous three years (2019, 2018 and 2017) and performing the required calculations. The necessary data for completing this table may be obtained from the applicable Contractors' Log 300 and Form 300A.
    iii. Complete Table B by providing the required site information for the last three years (2019, 2018 and 2017) and performing the required calculations for each "Applicable Contractor." (Definition: An Applicable Contractor is a contractor whose employees have worked at least 1,000 hours for a VPP participant in any calendar quarter within the last 12 months and were not directly supervised by the participant's employees.) Complete a separate Table A for each Applicable Contractor.
    iv. Total the data for all Applicable Contractors and determine the overall site Applicable Contractor 3-year TCIR and DART Rates. Applicable Contractor 3-year rate summaries should be placed at the bottom of Table A. Log 300 and Form 300A are not required for Applicable Contractors.

Table A
Applicable Contractor Recordable Nonfatal Injury and Illness Case Incidence Rates

Name of Applicable Contractor:

NAICS Code for applicable contractor's work at your site:

1	2	3	4	5	6	7
Year	Total Number Employees	Total Work Hours	Total Number of Injuries & Illnesses	Total Case Incidence Rate for Injuries and Illnesses (TCIR)	Total Number of Injury & Illness Cases Involving Days Away from Work, Restricted Work Activity, and/or Job Transfer	Days Away from Work, Restricted Work Activity, and/or Job Transfer Rate (DART Rate)
2021						
2020						
2019						
Total						
Most recently published BLS rates for the contractor's industry: NAICS code: _____						
Contractor's 3 Year Average TCIR and DART rates:						
Percent above or below BLS Average:						

Calculating Rates for Table A

Annual rates are calculated by the formula (N/EH) x 200,000 **where:**

N = Total number of recordable nonfatal injuries and illnesses occurring during the calendar year. ***Site VPP Participants*****:** This number will encompass the total injuries and illnesses of your site employees, including temporary employees and any contractor employees directly supervised by your employees.

For the TCIR, use the total number of injuries and illnesses (Columns H+I+J, 300 Log).

For the DART rate, use injuries and illnesses resulting in days away from work, restricted work activity, and/or job transfer (Columns H+I, 300 Log).

EH = Total number of hours worked by employees during the year. ***VPP Participants*****:** This number will be hours worked by your site employees including temporary employees and any contractor employees directly supervised by your employees.

200**,**000 = equivalent of 100 full time employees working 40 hours per week, 50 weeks per year.

The 3-year TCIR is calculated by:

$$\text{3 Year TCIR} = \frac{(H1+I1+J1) + (H2+I2+J2) + (H3+I3+J3)}{(EH1+EH2+EH3)} \times 200,000 \text{ Hrs.}$$

Where H = Column H data for each specific year, I = Column I data for each specific year, J = Column J data for each specific year and EH = total hours worked by all employees during each specific calendar year. Column reference is to the 300 Log.

The 3-year DART Rate is calculated by:

$$\text{3 Year DART Rate} = \frac{(H1+I1) + (H2+I2) + (H3+I3)}{EH1+EH2+EH3} \times 200,000 \text{ Hrs.}$$

Where H = Column H data for each specific year, I = Column I data for each specific year, and EH = total hours worked by all employees during each specific calendar year. Column reference is to the 300 Log.

BLS data: Enter the TCIR and DART rates for your industry from the Bureau of Labor Statistics (BLS) Table of Incidence Rates of Nonfatal Occupational Injuries and Illnesses by Industry (Table 1).

Compare your rates average to the most recently published BLS average rates for your industry: Calculate the percent above or below the BLS average for your TCIR and DART rates using the formula:

[(Site rate - BLS rate) divided by BLS rate] x 100.

Table B: Summary Information

Summary - All Applicable Contractors who worked for OC San at an OC San facility			
Total Number of Applicable Contractor Employees 3 Yr.	**Hours Worked Onsite of All Applicable Contractor Employees 3 Yr.**	**Combined Applicable Contractor TCIR 3 Yr.**	**Combined Applicable Contractor DART Rate 3 Yr.**

Instructions for Table B

(1) Summary of Applicable Contractors who worked for OC San: All data in these cells must reflect the combined contractor employee numbers and hours worked at the approved site for **Applicable Contractor employees only**. (Combine data for all Applicable Contractors requiring Table B)

I. Significant Events or Changes

Describe the impact of any significant event, the change that occurred, and the steps taken to ensure or restore employee safety and health (e.g., change in management, corporate buy-out, complaint, accident, catastrophe, fatality, Cal/OSHA citation, etc.). Attach additional pages if needed:

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ORANGE COUNTY SANITATION DISTRICT	SOP-614 (Ver. 3) Hazardous Waste and Materials Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The Orange County Sanitation District (OC San) is committed to managing hazardous waste in a manner that eliminates or minimizes the effect it has on human health and the environment.

The Hazardous Waste and Materials Program (HWMP) is a critical element in the success of the OC San's commitment to that goal. This program must be understood and complied with by all employees and contractors charged with the responsibility of handling, transporting, storing, and disposing of hazardous waste generated by OC San or by a designee on our behalf.

II. Background

The program contains procedures to allow our employees and contractors to handle, transport, and dispose of hazardous waste in a manner that meets regulatory requirements, uses a best practices approach, promotes hazardous waste minimization, and protects human health and the environment.

OC San will manage, store, and dispose of waste generated due to business activities or emergencies, including but not limited to maintenance-derived waste, investigation-derived waste, demolition, and renovations.

III. Definitions

Aboveground Storage Tank (AST): An aboveground storage is any one or combination of tanks, which could be constructed from metal, plastic, composite materials—or some combination of all three that are located completely above the ground surface.

Acutely Hazardous Waste: Waste that has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, has been shown in studies to have an oral LD_{50} toxicity (in rabbits) of less than 2mg/l, or a dermal LD_{50} toxicity of less than 200mg/kg, or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible illness.

Authorized Signer: Those who have been designated through appointment from the Sanitation District and who have received regulatory training in Hazardous Materials and Management for Compliance with DOT requirements. Refer to Attachment A for a list of authorized signers.

Biohazard Label: A label affixed to containers of regulated waste, refrigerators/freezers and other containers used to store, transport or ship blood and OPIM (Other Potentially Infection Materials). The label must be fluorescent orange red in color with the biohazard symbol and the word biohazard on the lower part of the label.

Consolidation Site: A site to which hazardous waste initially collected from a remote site, as defined in the Health and Safety Code section 25121.3, is transported to a consolidation site, which is operated by the Generator of the hazardous waste.

Contaminated: The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Sharps: Any contaminated objects that can penetrate the skin including, but not limited to needs, scalpels, broken glass, capillary tubes, and the exposed ends of dental wire.

Consolidated Unified Program Agency (CUPA): the unified program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement. The state agencies are responsible for these programs and set the standards for their program while local governments implement the standards. The unified program is implemented at the local county level.

Hazardous Materials: Any product regulated by OSHA, Department of Transportation (DOT), and any other regulatory agency.

Hazardous Waste: A liquid, solid, contained gas, or sludge wastes that are corrosive, flammable, reactive and/or toxic as defined by Title 22 of the California Code of Regulations, Section 66261. Hazardous wastes, such as contaminated soils, liquids, and other wastes as listed and defined in 40 CFR 261.3, or regulations as hazardous waste in California pursuant to Chapter 6.5, Division 20, California Health and Safety Code, or those substances defined as hazardous wastes in 49 CFR 171.8, shall be handled, transported, labeled, stored and disposed of in accordance with Federal OSHA, Cal/OSHA, DOT and other applicable regulatory agencies.

Hazard Waste Manifest: A written document that accompanies a shipment of hazardous waste during transport.

Hazardous Waste Minimization: Methods to minimize the amount of hazardous waste before the wastes are generated. The term includes source reduction and environmentally sound recycling.

Large Quantity Generator: Large-Quantity Generators of Hazardous Waste produced in one calendar month during a reporting year: 1. Greater than or equal to 1,000 kilograms (2,200 lbs.) or more of non-acute RCRA hazardous waste (which includes quantities imported by importer site); or 2. Greater than 1 kg. (2.2 lbs.) of any RCRA acute hazardous waste listed in 40 CFR sections 261.31 or 261.33(e); or 3. Greater than 100 kg (220 lbs.) of residue or contaminated soil, waste, or other debris resulting from the cleanup of a spill, into or on any land or water, of any RCRA acute hazardous waste listed in 40 CFR sections 261.31 or 261.33(e); and/or 4. Treated, stored, or disposed of RCRA hazardous wastes on-site (TSDF).

Non-RCRA Hazardous Waste: Non-RCRA Hazardous Waste: All hazardous waste regulated in the State of California, other than RCRA (federally regulated) hazardous waste. A hazardous waste is presumed to be RCRA hazardous waste, unless it is determined pursuant to Section 66261.101 that it is a non-RCRA hazardous waste.

Resource Conservation and Recovery Act (RCRA): The act that gives EPA the authority to control hazardous waste from the “cradle to grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste.

Reportable Quantity (RQ): is the minimum quantity of a hazardous substance which, if released, is required to be reported.

Small Quantity Generator: Generators of less than 1,000 kg of hazardous waste per month, excluding universal wastes, and/or 1kg or less of acutely or extremely hazardous waste per month.

Straight Bill of Lading: A document signed by a carrier (a transporter of goods) or the carrier's representative and issued to a cosigner (the shipper of goods) that evidences the receipt of goods for shipment to a specified designation and person.

Storage Facility: A hazardous waste facility at which the hazardous waste is either: Held onsite past the applicable time limit (90/ 180/270 days); Held for any period at an offsite facility that is not a transfer facility; or Held at a transfer facility for periods longer than six days, or longer than 10 days for transfer facilities located in industrial areas. DTSC may extend the above period for hazardous waste that is generated because of an emergency release and that is collected and temporarily stored by emergency rescue personnel, as defined in Section 25501, or by a response action contractor, upon the request of emergency rescue personnel or the response action contractor. The hazardous waste is held at a transfer facility for any period in a manner other than in a container or tank. The hazardous waste is held at a transfer facility for any period and handling occurs other than the transfer of packages or containerized hazardous waste from one vehicle to another. A grant of authorization from the Department is required for a Hazardous Waste Storage Facility.

Treatment, Storage, and Disposal Facility (TSDF): Is the treatment, storage, and disposal facility by technique or process designed to change the nature of a hazardous waste physically, chemically, or biologically. The TSDF also is designed to store or hold hazardous waste for a temporary period, after which the hazardous waste is treated, disposed of, or stored elsewhere. The final disposal consists of discharge, deposit, injection, dumping, spilling, leaking, or placing any solid or hazardous waste on or in the land or water.

Underground Storage Tank (UST): An underground storage is any one or combination of tanks, including pipes connected thereto, that are used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground.

IV. Roles and Responsibilities

A. Risk Management Division

1. Implement and manage the overall program for hazardous waste and materials to ensure that all employees are trained at the level required for handling and storing, of hazardous waste.

2. Responsible for communicating with third-party vendor for the transport and disposal of hazardous waste.

3. Develop a program and procedures for properly managing hazardous waste and recycling waste as applicable.

4. Select contractors in accordance with OC San procurement requirements and to have the contractor properly transport and dispose of hazardous waste in a manner that limits OC San's liability and minimizes environmental impact.

5. Establish and maintain an annual budget for the disposal of hazardous waste generated by OC San activities.

6. Determine which employees will receive hazardous waste training and provide final approval for the training.

7. Inspect waste accumulation areas weekly and address findings in a timely manner. Inspections may be delegated to trained and authorized staff or contractors.

8. Interface with hazardous waste transporters and disposal facilities.

9. Prepare and sign hazardous waste manifests prior to transport.

10. Participate in required hazardous waste management and DOT training.

11. Interface with local, state, and federal agencies regarding waste storage, handling, and disposal.

12. Complete required regulatory reporting, including but not limited to hazardous waste fee and tax reports.

13. Analyze proposed legislation on hazardous waste issues for potential impact to OC San.

14. Annually review and update, as applicable, this program and related program elements.

15. Maintain program recordkeeping as required by applicable federal, state, or local regulations.

B. Environmental Technician

1. Consolidate waste from remote locations (i.e. off-site ferric chloride chemical dosing stations) on quarterly basis.

2. Prepare and sign hazardous waste manifests prior to transport of waste materials for consolidation.

3. Participate in required hazardous waste management and DOT training.

C. Employees

1. Comply with all the standard operating procedures and all elements of this program as it pertains to them.

2. Ensure hazardous waste and materials are stored in proper containers and labeled.

3. Manage hazardous waste in accordance with this program as it pertains to them.

4. Notify their supervisors and/or Risk Management for any issues or assistance with hazardous waste and material requirements.

5. Ensure hazardous waste and material training are conducted in compliance with regulatory requirements and OC San program and policies.

D. Contractors

1. Comply with all standard operating procedures and all elements of this program as well as the Contractor’s Hazardous Waste Management Plan and all applicable federal, state, and local regulations for storage, management, transport, and disposal.

2. Notify OC San and Risk Management of Lead and Asbestos related work prior to abatement, demolition, remodel, or remediation.

3. Provide sampling and analytical results prior to storage and/or disposal of hazardous wastes from soil-related waste materials to determine waste determination and profiling and status of methods of disposal.

4. Contractors shall use OC San approved hazardous waste transportation and disposal vendor.

5. Notify Risk Management of hazardous waste related work to prepare the signing of the manifest by OC San authorized personnel and to receive copies of the manifested paperwork.

6. Notify Risk Management one (1) month in advance of all construction projects that will generate hazardous waste offsite so Risk Management can procure a temporary EPA ID for disposing of generated waste.

E. Project Coordinators and Construction Management

1. Contact Risk Management regarding new waste streams or handling/transport and disposal of hazardous waste.

2. Ensure projects have adequate funding for hazardous waste management.

3. Manage hazardous waste in accordance with this program.

4. Ensure contractors store and properly label hazardous waste in proper containers and on proper secondary containment.

F. Division Generating Hazardous Waste

1. Division management shall provide a list of employees requesting participation in the hazardous waste management training program.

2. Determination shall be determined by job tasks involving the handling of hazardous waste.

3. Manage hazardous waste in accordance with this program.

4. Develop processes that minimize the amount of hazardous waste generated.

5. Ensure hazardous waste is placed in appropriate containers.

6. Contact the Risk Management Division regarding hazardous waste pick up including types and quantities.

7. Contact the Risk Management Division regarding new waste streams, handling, transport, and disposal options.

8. Do not transport hazardous waste between OC San facilities or disposal sites without prior authorization from Risk Management.

9. Hazardous waste shall not be transported in personal vehicles at any time.

10. Only use hazardous waste transporters and disposal companies approved by Risk Management Division.

V. Procedure

A. General

1. Only trained personnel shall handle, store, and dispose hazardous waste and materials.

2. Personal protective equipment (PPE) appropriate for waste types shall always be worn when handling, storing, and disposing of hazardous wastes.

3. Wastes shall not be mixed or stored with other incompatible waste streams in the same location.

4. Hazardous wastes shall not be poured into a drain or wastewater streams.

5. All incidental spills of hazardous waste shall be reported and promptly cleaned up.

6. Hazardous waste accumulation areas shall be maintained in an orderly fashion.

B. Manifests / Bill of Ladings

1. Personnel authorized to sign waste manifests shall be trained in accordance with this program.

2. All waste manifests will be signed by OC San, except where permission is granted to a licensed hazardous waste contractor, and they have been assumed the role of generator. Authorization for the licensed hazardous waste contractor to assume role of generator shall be granted by the Risk Management Safety and Health Supervisor and for only a specified time.

3. A ball point pen shall be used to sign the original copy of the manifest. The signer shall press firmly down on the paper when making corrections to the manifest as well as signing the copy.

C. Containers

1. All containers holding hazardous waste or hazardous materials shall be kept closed, except when adding or removing materials from the container.

2. All containers shall be properly labeled with the proper label types and accumulation dates if said containers are used for waste accumulation.

3. Approved containers used to accumulate, or store waste shall be maintained in good condition and not be modified or altered.

4. The hazardous waste containers used to accumulate waste shall not show signs of severe oxidation, corrosion, rusting or apparent structural defects.

5. Containers shall not be filled to the top with liquid or solids and shall allow headroom for expansion.

6. Containers shall be compatible with the product or waste content. Hazardous materials and wastes shall be accumulated in DOT approved containers.

7. Corrosives shall be stored in compatible containers and shall not be placed in metal drums or metal containers.

8. To avoid chemical reactions such as heat, fire, explosion, pressure, etc., wastes shall not be mixed.

9. Hazardous waste shall not be placed in a container that previously held an incompatible waste or material.

10. Waste and materials that have ignitable and reactive characteristics shall be kept away from sparks, open flames, extreme heat, static electricity sources, and other sources of ignition.

11. Storage containers holding a hazardous waste or material that is incompatible with any other waste or materials stored nearby shall be physically separated from the other materials by means of a dike, berm, or wall. Containers containing flammable waste will be stored in a flammable cabinet.

D. Labeling

1. Hazardous waste labels are made available in the central waste accumulation areas by Risk Management. Please contact Risk Management if you are not able to find a specific label for the waste material. may be obtained from Risk Management.

2. Waste profiles have been determined for routine waste disposed of by OC San. Pre-printed labels are available for each of the waste materials that have a waste profiles completed. At a minimum, the following information must be provided on each waste label:

    - Company Name
    - Address
    - Phone Number
    - EPA Identification Number
    - Accumulation Start Date
    - Physical State
    - Hazardous Properties

3. Label shall be adhered effectively to the hazardous waste container. Labels shall be placed horizontally across the container so it can be easily read. Do not place the label on the container lid.

4. Labels shall be legible.

5. Empty hazardous waste and materials containers that previously contained liquid or solid hazardous waste shall be identified as “Empty” with appropriate label.

6. Accumulation start dates shall be indicated on the labels as soon as waste accumulation begins.

E. Empty Containers

1. Empty drums shall not have further dripping of substance when inverted and inverted at various angles.

2. No empty drums shall contain any remaining pourable materials or hazardous waste.

3. If the container held a hazardous waste, one of the following conditions shall be met for the container to be empty:

   a. The container has been cleaned by another method that has been shown by tests conducted by the generator to achieve equivalent removal.

   b. The container has been triple-rinsed with a solvent capable of removing the chemical product or waste.

   c. A container that has held a compressed gas hazardous waste is considered empty when the pressure in the container approaches atmospheric pressure.

4. Containers that have not been emptied as described in this section shall be managed as hazardous waste.

F. Hazardous Waste Accumulation Areas

1. Satellite Accumulation

   a. Hazardous waste may be generated at or near the point where it is initially generated.

   b. Up to 55-gallons of hazardous waste or 1-quart of acute or extremely hazardous waste may be accumulated at each point of generation. The 55-gallon or 1-quart limit applies to either:

      1) The process or group of processes

      2) Each separate waste stream if incompatible

   c. The container must be under the control of the operator of the process that generates the waste.

   d. Containers must be labeled with hazardous waste labels.

   e. When the 55-gallon or 1-quart limit is reached, the waste must be marked with the date and, within three days, moved to the 90-day or 180-day Central Area Waste Accumulation. This new date is the start date for the 90- or 180-day accumulation allowance.

   f. The maximum permitted onsite accumulation allowed for any waste is one year (365 days).

2. Central Area Waste Accumulation

   a. Hazardous waste may only be stored in these areas for 90- or 180-days depending on generator status.

   b. All wastes shall be stored in proper containers and shall have a hazardous waste label sticker with the accumulation start date written of the day the container accumulates wastes.

   c. This area shall be inspected at least weekly.

3. Maps of the waste accumulation areas can be found in the Maps Library of the San Box.

G. Blood-borne Pathogens Biohazard Waste and Sharps

1. Regulated Biohazard Waste
   a. Handling, storage, treatment, and disposal for all regulated waste shall be in accordance with Health and Safety Code and federal, state, and local regulations.
   b. All blood or blood products contaminated wastes shall be in biohazard waste bags and/or container.
   c. Containers with biohazard waste shall be labeled with the words “Biohazard Waste” or with the international biohazard symbol and the word “BIOHAZARD” on the lid and on the sides as to be visible from any lateral direction.
   d. Biohazard waste shall not be disposed of before being treated by an offsite treatment facility.

2. Disposal of Sharps Containers
   a. Sharps shall be in approved sharps disposal containers.
   b. Sharps container shall be closed prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping and labeled.
   c. The disposal container shall be color-coded with proper labels affixed to containers of regulated waste.
   d. Labels required shall include the international symbol for biohazardous waste or sharps waste and shall be fluorescent orange or orange-red or predominately so, with lettering and symbols in a contrasting color.
   e. Sharps containers shall only be filled ¾ to the top as to avoid overfilling of sharps.
   f. All biohazard wastes and sharps shall be disposed of by a vendor that is authorized by Risk Management.

H. Recycled Waste

1. OC San and Contractors shall seek safe and effective ways of recycling, reusing, and reclaiming hazard wastes.

2. The following wastes shall be recycled:
   a. Universal Waste
      1) Universal waste shall accumulate onsite no longer than 270 days.
      2) Universal waste shall be disposed of by methods of recycling or reclamation by OC San’s contracted vendor and its facility and paper generated for universal waste shall be recorded on a Straight Bill of Lading and not on a Uniform Hazardous Waste Manifest to satisfy the requirements of shipping and transportation.
      3) The following materials are accepted as recyclable universal waste and therefore shall never be disposed of in regular trash:
         - Batteries (lead acid, NiCad, etc.)

- Lamps
- Electronic Devices
- Empty Aerosol Cans
- Mercury-containing Equipment (thermostats, motor vehicle light switches, pressure or vacuum gauges, counterweights and dampers, thermometers, gas flow regulators, etc.)
- Cathode Ray Tubes (CRTs)
- Cathode Ray Tube Glass
- LCD desktop monitors
- Laptop Computers with LCD Displays
- LCD and Plasma Televisions
- Copiers
- Fax Machines
- Printers

4) Hazardous waste labels shall be clearly marked with the phrase “Universal Waste” along with the content such as “Used Batteries,” “Waste Pesticide,” or “Waste Mercury.” The label shall be clearly marked with the initial date of when the waste was accumulated.

5) Used batteries shall be stored in a non-reactive, structurally secure, and closed container. The hazardous waste sticker shall be labeled with the initial start date and the words “Universal Waste-Used Batteries.”

I. Used Oil

1. Used oil must be treated as a hazardous waste unless if it is determined to be exempted. OC San may test used oil to determine if the oil is exempt. If exemption is sought, testing will be completed following Section 25220.1(a)(3)(B). If the used oil is exempt, then the use oil may be managed as a recyclable material.

2. Used oil cannot be mixed with any listed hazardous waste or material that exhibits a hazardous waste characteristic.

3. Bulk used oil is collected at the following locations:

   a. Plant 1 CenGen, 2,000 gallons capacity tank of Used Oil Underground Storage Tank, Northeast of the building

   b. Plant 2 CeGen, 2,000 gallons capacity tank of Used Oil Underground Storage Tank, Southeast of the building

J. Used Oil Filters

1. Used oil filters shall be drained of free-flowing used oil.

2. Accumulated, stored, and transferred in a rain-proof container that is capable of containing any oil that may be separate from the filters.

3. Stored in containers with the lid sealed or closed at all times, except when being filled.

4. Legibly labeled with the words “Used Oil Filters” with the accumulation start date.

5. Transported offsite to be recycled.

K. Oil/Solvent Rags

1. Oil/solvent soaked rags shall be placed in covered red accumulation containers daily.

2. No other materials shall be disposed of in the red containers.

3. No free liquids shall accumulate in the container and no hazardous wastes can be added after the rags original use.

4. Soiled rags shall be consolidated to Plant 1 and Plant 2 Warehouse, Fleet Services, or Central Generation on a weekly basis for laundering.

5. Accumulation containers for oil or solvent rags can be found in the following locations:

   - Plant 1 Fleet services
   - Plant 1 Central Generation Maintenance Bay
   - Plant 1 Rebuild Shop
   - Plant 1 Warehouse
   - Plant 1 Paint shop
   - Plant 2 Maintenance Building
   - Plant 2 Warehouse
   - Plant 2 Central Generation Maintenance Bay

L. Underground Storage Tanks

1. Underground Storage Tanks (UST) shall provide a method, or combination of methods or release detection that can detect a release from any portion of the tank and the connected underground piping that routinely contains product.

2. USTs shall be calibrated and maintained, and capable of notifying the operator in the event of a leak. OC San maintains a list of underground storage tanks which can be provided upon request.

3. Spill containment supplies are provided at a location adjacent to the UST.

M. Aboveground Storage Tanks

1. All aboveground storage tanks shall have their NFPA diamond visible, be labeled with its contents, and the initial accumulation start date.

2. All containers storing hazardous materials or waste shall have tight-fitting lid that is kept closed except when the waste or material is being added or removed.

3. All Aboveground Storage Tanks shall be inspected on a weekly basis and the records of the inspection sheet shall be kept on file.

N. Waste Determination and Profiling

1. Hazardous wastes that are managed and will be disposed of shall undergo waste determination and profiling prior to shipping.

2. Risk management will determine if the hazardous waste meets either of the following waste characteristics: toxic, corrosive, reactive or flammable.

3. Risk Management may perform testing the hazardous waste to determine characteristic or apply generator's knowledge of the hazard characteristic of the waste in the process used.

4. Risk Management shall work with its contracted environmental service vendor to create profiles for the wastes.

O. Training

1. Hazardous Waste Generator (RCRA) and Supplemental Hazardous Communication and Hazardous Waste Training

   a. This training is assigned to all employees are who are likely to dispose of waste at OC San's satellite and central waste areas.

   b. This course provides basic information on hazardous waste determination and characterization. In addition, this course describes the three types of generator status (Conditionally Exempt Small Quantity Generator, Small Quantity Generator, and Large Quantity Generator) along with applicable requirements. This training addresses accumulation, labeling, and other management requirements for both satellite accumulation areas and 90-day accumulation areas. The importance of, and methods for, waste minimization, and spill prevention and response are defined.

   c. Employees shall complete training within 6 months after their date of their employment or assignment to a facility, or to new position at facility, or to a new position at a facility.

   d. Training shall be completed on an annual basis.

   e. Employees shall not work unsupervised positions until completion of training.

2. Hazardous Waste Management Training

   a. Facility personnel managing, handling, transporting, and disposing hazardous waste shall receive this training for waste characterization, determining proper shipping names, manifesting, completing land disposal notices, and recordkeeping purposes. Training provides these facility personnel in accumulation point inspections, updates in hazardous waste regulations, and waste lists.

   b. DOT training shall be completed at least once every three years to meet the training requirements set forth in 49 CFR 172.

3. DOT Hazardous Materials Training

   a. Facility personnel managing, handling, transporting, and disposing hazardous waste shall receive this training to understanding the following:

      - Label, mark, inspect, or design containers
      - Place hazardous materials into containers
      - Prepare hazardous materials for transportation
      - Prepare bills of lading or hazardous waste manifests
      - Operate a vehicle used to transport hazardous materials

   b. DOT training shall be completed at least once every three years to meet the training requirements set forth in 49 CFR 172.

4. Offsite Consolidation of Hazardous Waste

a. Employees transporting consolidated wastes from offsite to Plant 1 or Plant 2 Central Area Waste Accumulation shall receive DOT Hazardous Materials and Management of Hazardous Waste Training.

b. Request for training shall be made to Risk Management.

5. Training Records

a. Risk Management maintains the list of trained personnel. The list of persons may change periodically. Training records can be provided upon request.

b. Please refer to the Hazardous Waste Material Safety Training Matrix for a list of OC San job classifications and corresponding training.

P. Reporting Requirements

1. Manifest Reporting to DTSC

a. OC San shall receive a copy of each hazardous waste manifest from the TSDF that shows final disposition of the waste within 30 days from transport.

b. Past 35 days of not receiving the Manifest from the TSDF, OC San shall contact the TSDF.

c. Past 45 days, OC San shall send an exception letter to the DTSC (Department of Toxic Substances Control).

d. Risk Management shall keep the original manifest.

e. Under California law, generators will still be required to send the generator copy of the manifest to DTSC by mail. The only exception is when a manifest starts and finishes as an electronic manifest in the e-Manifest System. The generator shall within 30 days of each shipment of hazardous waste submit to DTSC a legible copy of each manifest used. Please send to: DTSC Generator Manifests Department of Toxic Substances Control P.O. Box 400 Sacramento, CA 95812-0400

2. Biennial Hazardous Waste Generator Reporting

a. Large quantity generators shall submit a report to DTSC by March 1st every two years regarding the nature, quantity, and disposition of hazardous waste generated at the facility.

b. The Federal and State hazardous waste regulations require the reporting of hazardous waste activities of RCRA (Resource Conservation & Recovery Act) waste on a biennial basis on odd-numbered calendar years for the previous even-numbered calendar years and shall be postmarked no later by March 1st.

c. The total sum of pounds for the RCRA wastes shall be calculated for each plant to determine filing status by referring to the manifests for the applicable year.

d. If either or both plants are exempt from filing the biennial report, OC San shall complete the Biennial Report Exemption Form.

3. SB-14 Hazardous Waste Source Reduction Reporting

a. Generators who generate over 12,000 kilograms (26,455 lbs.) of hazardous waste or 12 kilograms (26.45 lbs.) of extremely hazardous waste must file a SB-14 Hazardous Waste Source Reduction Plan.

b. If generators exceed the requirements, then the generator shall determine if the wastes are exempt from SB-14 reporting. If all wastes are exempt, then SB-14 reporting is not required.

If required to file a SB-14 report, OC San shall reduce the generation of hazardous waste at its source as well as recycle hazardous waste to show efforts in hazardous waste source reduction. Where source reduction or recycling is not feasible, the waste should be treated in an environmentally safe manner to minimize the present and future threat to human health and the environment.

4. Hazardous Materials Business Plan

a. Facilities that generate handle hazardous materials or mixtures containing a hazardous materials that has a quantity at any one time during the reporting year equal to or greater than 55 gallons (liquid), 500 pounds (solids), or 200 cubic feet (compressed) gas.

b. The Hazardous Materials Business Plan (HMBP) is submitted through the California Environmental Report System (CERS) by March 1st of every year.

c. Depending on participating agencies, the documents shall be submitted via portal system on esubmit.ocgov.com by authorized users, or hardcopies shall be mailed in to the local CUPA agency.

d. The HMBP shall be reviewed every year, or within 30 days of a change in reporting materials.

e. Business plans are required for each facility where these materials are stored.

f. Business plans shall include inventory of hazardous materials located at the facility in quantities listed above, emergency response plans and procedures, training, and a site map showing locations of site features, material storage, and other safety systems.

5. Remote Waste Consolidation

a. OC San consolidating any hazardous waste chemicals (i.e., oils, ferrous chloride filters) at offsite locations such as the pump stations shall submit the Remote Waste Consolidation Site Annual Notification Form in CERS during the HMBP submission.

b. No annual notification need be submitted if there are no chemicals to be reported due to lack of need to consolidate.

Q. Inspections

1. Quarterly Audits

a. Quarterly hazardous waste and materials inspections shall be conducted by Risk Management.

b. All records and findings shall be logged onto the waste inspection sheet form found on Cority. All findings shall be addressed and corrected within a month of the findings.

c. The inspection shall look for the following:

- Proper labeling of hazardous waste and materials.
- Use of proper secondary containment for drums containing 55 gallons or more of liquid.

- Proper secondary containment shall not be filled with rainwater or any spill content
- All drums shall be in good condition and free of rust, corrosion, defects, and leaks.
- Universal waste, such as batteries, shall not exceed the 365 days accumulation period
- Spillage or overflow of hazardous waste or materials shall not be observed at satellite accumulation sites
- All hazardous waste and materials shall be segregated and placed in compatible drums as described in this program.
- All drums containing either hazardous materials or waste shall have lids closed and sealed tightly.
- Spill containment kits are in good condition and stocked.

2. Weekly Audits
   a. Central Area Waste and Satellite Area Accumulation shall be inspected once a week.
   b. The environmental services contractor shall conduct the weekly inspection and turn the inspection form with any findings to Risk Management.
   c. If the environmental service contractor is not scheduled on the day that the weekly inspection is completed, Risk Management will perform the inspection.

R. Hazardous Waste (Program) Audit

1. The hazardous waste program will be audited annually by a third party to assess compliance with hazardous waste regulations.

2. The audit shall evaluate the status of hazardous waste management compliance programs and best management practices at the facility.

3. All materials required for evaluation and review by the auditor shall be made available upon auditor's request.

4. The audit shall provide OC San with a list of issues requiring review and actions by the owner of responsibility.

5. The list requiring review and corrective action shall be completed within 3 months of when the list was provided.

S. Recordkeeping and Retention

1. Hazardous material records (i.e., Business Plans, Hazardous Materials Inventory, Disclosures) will be retained for five (5) years in accordance with the OC San retention schedule.

2. Hazardous waste records (i.e., manifests, disposals) will be retained for the life of the organization in accordance with the OC San retention schedule.

3. Program audits shall be kept for a minimum of one year.

4. The job title for each position related to hazardous waste management, and the name of the employee filling each job.

5. A written job description for each position related to hazardous waste management, including the requisite skill, education or other qualifications and duties of employees assigned to each position.

6. A written description of the type and amount of both introductory and continuing training that will be given to each person filling each of these positions. Records that document that the training or job experience required has been given to, and completed by, facility personnel.

7. Training records on current personnel must be kept until closure of the site. Training records on former employees must be kept for at least three years from the date the employee

8. Hazardous materials and waste training records for required DOT shall include the following:
   a. The employee's name
   b. The most recent training completion date of the employee's training
   c. A description, copy, or the location of the training materials used to certify that the employee has been trained and tested.

VI. References

California Health and Safety Code, Section 25110.10

Title 22, California Code of Regulations, Section 66262

EPA (Environmental Protection Act) www.epa.gov

DTSC (Department of Toxic Substances and Control) www.dtsc.ca.gov

DOT (Department of Transportation) www.dot.gov

Chapter 6.95, Division 20 of the California Health and Safety Code (H&SC) and Chapter 116, Section 11022 of Title 42

CUPA (Certified Unified Program Agency (www.occupainfo.com)

VII. Revision History

Version	Date	By	Reason
1.0	11/21/2003	Bauer, Wesley	Initial
2.0	07/20/2020	Hachim, Sabrina	Periodic Update – Refer to Program Change Log
3.0	12/13/2021	Frattali, John	Annual Program Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-626 (Ver. 6) Fall Protection / Walking Working Surfaces
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of the Elevated Work and Fall Protection Program is to protect Orange County Sanitation District (OC San) staff and contractors from falls to a lower level, slip, trips and falls, and other related hazards associated with elevated work by establishing policies and procedures for the selection, inspection, and use of fall protection systems and equipment.

This program defines fall hazards applicable to OC San, establishes requirements for fall protection systems and rescue, and training for the use, inspection, and limitations of available fall protection systems.

II. Background

It is the policy of the OC San to protect its employees from occupational injuries by implementing and enforcing safe work practices, including the appointment of Competent Persons to manage this program.

OC San has developed this program in accordance with the state of California and Federal Occupational Safety and Health Administration (CALOSHA) general industry and construction safety orders.

III. Scope

This program applies to all work performed at the OC San treatment plants, pump stations and collection system.

Fall protection is required where employees are exposed to:

1. Unprotected sides or edges of an elevated work location, such as roofs, landings, platforms, ramps, or working levels more than 30 inches above the floor, ground, or other working areas of a building.

2. Unprotected sides or edges of elevated work locations that are not buildings or building structures, such as machinery, equipment, aboveground storage tanks, tunnels, manholes, chemical containment areas, process hatches or vaults where an employee is exposed to a fall of 4 feet or more.

3. Employees engaging in construction activities on a walking-working surface with an unprotected side or edge which is 6 feet or more above a lower level.

4. Excavations or trenches that are four feet or more in depth, or where employees or equipment are required to cross over excavations greater than six feet in depth or that are remotely located.

This program does not apply to:

1. Entrances of ship stairs and stairways.

2. Fixed ladders providing access to work areas that are less than 20 feet from the floor or ground.

IV. Definitions

Administrative Controls – Safe work practices or procedures that are designed to prevent exposure to a fall by signaling or warning an authorized person to avoid approaching the fall hazard.

Aerial Lift Device – A means of equipment such as powered platforms, vehicle-mounted elevated and rotating work platforms, extensible boom platforms, aerial ladders, scissor lift, articulating boom platforms, vertical towers and powered industrial truck platforms.

Anchorage, Certified – A secure point of attachment for lifelines, lanyards, or deceleration devices. The anchorage for fall arrest, positioning, restraint, or rescue systems shall be certified by a qualified person to be capable of supporting the potential fall forces that could be encountered during a fall or that meet the criteria for a certified anchorage.

Authorized Person – A person assigned to perform work at a location where the person will be exposed to a fall hazard. An authorized person is required to receive training and to periodically demonstrate the ability to safely used the appropriate fall protection equipment. The authorized person may also be qualified for other positions such as a Competent Person, qualified person, or authorized rescuer.

Authorized Rescuer – A person assigned to perform rescue from fall protection. The rescuer is required to receive training and to periodically demonstrate the ability to perform rescue from fall protection.

Capacity – The maximum weight that a component, system, or subsystem is designed to hold.

Carabiner – A connecter generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object, and when released, automatically close to retain the object.

Clearance – The distance from the anchorage of a fall arrest system to the lower level that a worker might encounter during a fall, which includes total fall distance, deflection of anchorage and connectors, length and elongation of full body harness and body, and safety factor.

Competent Person – A designated employee responsible for the immediate supervision, implementation, and monitoring, through training and knowledge, that can identify, evaluating and addressing existing and potential fall hazards, who has the authority to take prompt corrective action with regards to such hazards.

Contractor – Organization or individual that provides goods and services to OC San under terms specified in a contract. The term contractor applies to contractors, subcontractors, consultants, service representatives and visitors.

Controlled Access Zone (CAZ) – An area in which bricklaying or precast concrete work may take place without the use of guardrails, personal fall arrest systems or safety nets. The work area is defined by a control line or other means that restricts access, including posting of signage. Lines shall be erected at least 6 to 25 feet from the lead edge and access to the zone is controlled.

Deceleration Device – A mechanism such as a rope grab, retracting lifeline or shock absorbing lanyard that absorbs or dissipates energy during a fall arrest.

Deceleration Distance – the vertical distance between the fall arrest attachment at the onset of fall arrest forces during a fall, and after the fall arrest attachment comes to a complete stop.

Descent Control Device – A load lowering device or mechanism that controls pay-out speed of line or descent speed under load once it has been engaged.

Designated Area – Means a distinct portion of the walking-working surface delineated by a warning line in which employees may perform work without additional fall protection.

D-Ring – An integral “D” shaped connector typically used in harnesses, lanyard, energy absorbers, lifelines, and connectors as an attachment point.

Descent Controller – A device designed to be used by one worker for personal descent or to lower another worker from an elevation. Can be used for egress, work positioning, or both.

Elevated Work – Any work that is done over another level or surface at heights above 4 feet, or work that is performed over a hazardous situation.

Energy (Shock) Absorber – A component whose primary function is to dissipate energy and limit deceleration forces which the system imposes on the body during fall arrest.

Fall Arrest – The action or event of stopping a free fall or the instant where the downward free fall has been stopped.

Fall Arrester – A device that travels on a lifeline and will automatically engage or lock onto the lifeline in the event of a fall.

Fall Hazard – Means any condition on a walking-working surface that exposes an employee to a risk of harm from a fall on the same level or to a lower level.

Fall Prevention – Any same level means used to reasonably prevent exposure to an elevated fall hazard. Floors, walls, guardrails, and area isolation are means of fall prevention.

Fall Protection – Any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such fall.

Fall Protection System, Active – A fall protection system that requires authorized persons to wear or use fall protection equipment and that requires fall protection training. The system is dynamic and requires the use of special equipment as well as worker participation. There are

two types of active fall protection systems, fall restraint and fall arrest systems, and are typically referred to as Personal Fall Arrest Systems (PFAS).

Fall Protection System, Passive – A fall protection system that does not require the use of personal protective equipment (PPE) or active participation from the worker. The system is non-dynamic, stationary, and does not move, adapt, or change when in or out of use.

Floor Hole – Any opening in a floor or platform which is smaller than a floor opening.

Floor Opening – An opening in any floor or platform, 12 inches or more in the least horizontal dimension, which includes stairway floor openings, ladderway floor openings, hatchways, and chute floor openings.

Free Fall – The act of falling before a fall protection system begins to apply forces to arrest the fall.

Free Fall Distance – The vertical displacement of the fall arrest attachment points of the person's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline and lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before their operation and before full arrest forces occur.

Guardrail System – A passive fall protection system of horizontal rails and vertical posts that prevent a person from reaching an unprotected edge of a walking-working surface or unprotected opening from which a person could fall to a lower surface or into a hazard.

Harness, Full Body – A body support designed to contain the torso and distribute the fall arrest forces over the upper thighs, pelvis, chest, and shoulders, with means of attaching it to other components of a personal fall arrest system.

Hole – Means a gap or void 2 inches or more in its least dimension, in a floor, roof or other walking-working surface.

Horizontal Lifeline – Linear anchoring devices, which allow workers to move along the whole length of the anchor, usually without needing to disconnect and fixing points of the anchorage.

Ladder Cage – Means an enclosure mounted on the side rails of a fixed ladder or fastened to a structure behind the fixed ladder that is designed to surround the climbing space of the ladder.

Ladder, Fixed – Means a ladder with rails or individual rungs that is permanently attached to a structure, building, or equipment. Fixed ladders are individual rung ladders, but not shop stairs, step bolts or manhole steps.

Ladder, Portable – Means a ladder that can readily be moved or carried, and usually consists of side rails joined at intervals by steps, rungs, or cleats.

Ladder, Safety System – Means a system designed to eliminate or reduce the possibility of fall from a ladder. A ladder safety system usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness. Cages are not ladder safety systems.

Lanyard – A flexible line or rope, wire rope or strap, which has a connector at each end for connecting to the body harness and to a fall arrestor, energy absorber, anchorage connector or anchorage.

Leading Edge - The edge of a floor, roof, or formwork for a floor other walking-working surface (such as a deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed.

Opening – Means a gap or open space in a wall, partition, vertical waling-working surface, or similar structure that is at least 30 inches high and 18 inches wide, through which an employee could fall to a lower level.

Owning Department - Department responsible for the inspection, maintenance, and the safe operation of their fall protection equipment.

Personal Fall Arrest System – An approved system used to arrest a person in a fall from a working level. It consists of an anchor point, anchorage devices, connectors, full body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Personal Fall Restraint System – An approved system that prevents the person from falling any distance. It consists of an anchor point, anchorage devices, connectors, full body harness, and may include a lanyard.

Positioning Device System – A full body harness system rigged to allow an employee to be supported on an elevated vertical service, such as a wall, and work with both hands free.

Program Administrator – Individual(s) tasked with the development, implementation, and management of the Fall Protection Program.

Qualified Person – A person with recognized training or professional certificate and with extensive knowledge and experience in the subject field, who is capable of, analysis, evaluation and specifications in the subject work, project, or product.

Rescue – The process of removing a person from danger, harm, or confinement to a safe location. Rescue may be assisted or performed directly by the stranded worker.

Safety Monitor – Designated Competent Person who monitors the safety of up to three other employees in a controlled access zone.

Scaffold – Means any temporary elevated or suspended platform and its supporting structure, including anchorage points, used to support employees, equipment, materials, and other items.

Self-Retracting Device – A device containing a drum wound line that automatically locks at the onset of a fall to arrest the user, but that pay out from and automatically retracts onto the drum during normal movement of the person to whom the line is attached. After onset of a fall, the device automatically locks the drum and arrests the fall. Self-retracting devices include self-retracting lanyards (SRLs), self-retracting lanyards with integral rescue capability (SRL-Rs) and self-retracting lanyards with leading edge capability (SRL-LEs) and hybrid combinations. SRLs are suitable for applications where during use the device is mounted or anchored such that possible free fall is limited to 2 feet or less.

Snap Hook – a connector comprised of a hook-shaped body with a normally closed gate or similar arrangement that may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

Stairway – Means riser and reads that connect one level with another and includes any landings and platforms in between those levels.

Three-Points of Contact – A best practice while on a ladder to reduce fall potential by keeping two feet and one hand, or two hands and one foot in contact with the ladder always.

Toeboards – A low protective barrier that is designed to prevent materials, tools, and equipment from falling to a lower level, and protect employees from falling.

Unprotected Sides and Edges - Any side or edge of a walking-working surface (except at entrances and other points of access), where there is no wall, guardrail system, or stair rail system to protect an employee from falling to a lower level.

Warning Line System – A visual or physical warning on a roof from the edge to warn personnel that they are approaching an unprotected opening, roof side or edge, and which designates an area in which roofing work may take place without the use of guardrails, fall arrest, or safety net systems to protect employees in the area.

Walking-working Surface – Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be in order to perform their job duties.

V. Responsibilities

A. Risk Management

Risk Management will serve as the Program Administrator for the Elevated Work and Fall Protection Program, which includes:

1. Develop and update this program in accordance with applicable regulations and guidance documents.

2. Measure and evaluate the effectiveness of this program on an annual basis.

3. Approve the selection and use of fall prevention systems and equipment.

4. Develop program training and compile lists of authorized personnel who perform the duties of Competent Persons.

5. Verify program audit requirements are met and that appropriate follow-up takes place to correct deficiencies.

6. Advise and provide guidance on all matters pertaining to this program.

7. Verify that procedures to identify, eliminate or control new and existing fall hazards exists and is being implemented.

8. Verify that fall protection procedures are developed for all locations where active fall protection systems are used to control a hazard.

9. Perform investigations of all incidents and near misses relating to falls from heights or same level.

B. Supervisors

Supervisors or designee will fulfill the role as the Competent Person for fall protection, which includes:

1. Review and understand this program.
2. Assign Competent Persons to identify, evaluate, mitigate, or eliminated fall hazards.
3. Complete the fall protection and rescue plans where the elimination of fall hazards through passive fall protection systems are not feasible.
4. Shall ensure employees have proper fall protection equipment.
5. Verify that competent and authorized persons adhere to requirements of this program.

C. Competent Persons

Supervisors or designee will receive Competent Person training. Contractors are required to have Competent Persons onsite when their employees are exposed to falls hazards.

1. Shall be responsible for immediate supervision, implementation and monitoring of the program.
2. Shall conduct a fall hazard survey to identify potential fall hazards before the Authorized Employees are exposed to those hazards.
3. Shall identify, evaluate, and restrict workplace activities to control fall hazards.
4. Shall stop work and implement prompt corrective measures to mitigate fall hazards.
5. Shall review this program to determine if additional practices, procedures, or training is needed to be implemented before workplace activities continue.
6. Shall verify that Authorized Employees are trained, and rescue procedures have been reviewed.
7. Shall verify that adequate fall clearance is provided before persons work at height with fall arrest systems.
8. Shall participate in the investigation of all incidents related to falls at the same level or at heights.
9. Shall immediately remove from service all personal fall protection systems and components that are damaged.
10. Shall inspect and document all fall protection equipment annually, as required by manufacturer and applicable regulations.
11. Shall suspend or postpone elevated work during periods of inclement weather (i.e., high wind, rain, electrical storms) that may threaten worker safety.

D. Authorized Employees

Employees exposed to fall hazards shall be receive Authorized Employee fall protection training, including:

1. Shall be trained to follow procedures and instructions by Competent Persons regarding use of fall protection and rescue systems.

2. Shall be trained on when to notify Competent Person to unsafe or hazardous conditions, unsafe work practices that may cause injury.

3. Shall properly use, inspect, maintain, store and care for fall protection equipment, systems, and personal protective equipment (PPE), per manufacturer's specifications or applicable regulations.

4. Shall inspect all fall protection equipment prior to each use for defects or damage, shall notify the Competent Person of such damage, and not use the equipment until repaired or replaced.

5. Shall report incidents, near misses, or hazards resulting from fall protection systems immediately.

6. Shall not climb, stand, kneel, crawl, etc., on conduit, piping, cable trays, or other equipment that is not designed to support a person's body weight.

7. Shall notify Competent Persons of fall equipment that has been subjected to forces from a fall for removal from use according to the manufacturer's specifications.

8. Prevent slips and trips by maintaining walking working surfaces free of clutter, tools, and other debris.

E. Qualified Persons

Qualified Persons shall:

1. Have knowledge, through education or professional certification, of applicable fall protection regulations, standards, equipment and systems, and engineering principles.

2. Design, select and oversee the installation of fall restraint, fall arrest, work positioning, and horizontal/vertical lifeline systems.

3. Participate in the investigation of all incidents related to falls from heights.

4. Meet the qualifications of a Competent Person.

Personnel designing personal fall protection systems shall be a State of California Professional Engineer (PE).

F. Contractors

1. Must have a written fall protection program if work is required to be performed at elevated locations. The fall program shall be developed by a Competent Person and in accordance with applicable governmental regulations and this procedure. The program may be part of the Injury and Illness Prevention Program or maintained as a separate program.

2. Personal fall restraint, fall arrest, work positioning, horizontal lifelines, and vertical lifeline systems shall be designed and installed under the supervision of a California Professional Engineer.

3. Must submit a fall protection and rescue plan to OC San for approval and use of fall protection systems.

4. Shall attempt to work from ground level where possible. If not practical, the contractor shall identify fall hazards and reduce risks.

5. Shall provide a Site-Specific Safety Plan (SSSP) to Risk Management prior to commencement of work at elevated locations that addresses where fall protection may be required and how fall protection will be achieved.

6. Shall provide fall protection equipment and systems to their employees.

7. Shall verify the use, inspection, storage, and maintenance of fall protection equipment with the requirements outlined in this document and all other applicable regulations.

VI. Acceptable Control Methods

The hierarchy of controls listed below will be utilized to eliminate or reduce fall hazards. When elimination is not feasible, various engineering and administrative controls will be evaluated to determine appropriate personal protection against the fall hazard. Fall hazards and existing controls shall be periodically reassessed to determine if a greater level of protection can be applied or if the hazard can be eliminated.

Fall hazards in the workplace may be addressed using one or a combination of the following hierarchy of control methods:

1. Elimination – Eliminating the fall hazard or preventing exposure to a fall hazard is the most effective control measure and should be considered for existing hazards or during new construction. This can be achieved by modifying a structure, isolating the authorized person from the hazard, changing a process, substituting equipment, or using work procedures so that the authorized person is not exposed to the fall hazard.

2. Passive Fall Protection - If it is not possible to eliminate the risk of a fall, reduce the risk using passive fall protection equipment. Passive fall protection offers a greater level of protection than active fall protection systems since there is no reliance on the authorized person. Passive systems include guardrails, covers capable of supporting weight, scaffolds, and aerial lift devices. Note: Aerial lift devices require the use of a personal fall restraint system.

3. Personal Fall Restraint System – These systems allow the authorized person access to conduct their work but prevent them from reaching a point of where a fall could occur. The system is generally suited if the authorized person needs to work at the edge of a hazard, such as a roof’s edge or at a hatchway in a process area. The fall hazard shall be positioned a greater distance away as compared to the fixed length of lanyard.

4. Personal Fall Arrest System - If it is not possible to use the above options, the use of a personal fall arrest system (PFAS) to arrest a fall after it occurs shall be used. This system provides the maximum freedom of movement for workers to conduct work. In

the event of a fall, the fall will be arrested requiring the person to be self-rescued or be rescued.

5. Work Positioning System – These systems are different from a PFAS in that the length of the lanyard is shorter and rigged in such a way that will both restrict the range of movement of the authorized person and prevent falls of more than two feet. These systems secure the worker in place, allowing the authorized person to perform tasks with both hands. This requires the use of special harnesses and lanyards.

6. Administrative Controls - If none of the above measures are possible, or the risk of a fall remains, the risk shall be reduced using administrative controls to further reduce the risk of falling. These controls may include erection of a controlled access zone, warning line system, warning signs, training, or safety monitoring system. The use of controlled access zones, warning line systems and safety monitoring systems shall be approved by Division supervisors (or designee) and Risk Management before they are implemented. These controls attempt to increase worker awareness of fall hazard and alone should not be relied upon.

VII. Elimination

The preferred and best way to protect employees from falls is to remove or eliminate the hazard or substitute the hazard with a lower risk hazard. For example, locating equipment on ground level would not require employees to navigate a ladder or an elevated location and be subject to a fall. Elimination is best achieved during the design and construction phase of a project.

VIII. Passive Fall Protection Systems

A. Guardrails

Where standard guardrail protection is required, the following standards shall be followed including specifications of CCR, Title 8, Section 3209.

1. Guardrails shall consist of a top rail, midrail (or equivalent protection), and vertical posts. Midrails shall be approximately half-way between the top rail and floor, ground or working level. More than one midrail may be provided to afford greater protection.

2. Guardrails shall be installed with a vertical height of 42 inches to 45 inches.

3. The top rail shall be smooth surfaced throughout the length of the railing. The midrail shall be approximately halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

4. All guardrails and other permissible types, including their connections and anchorage, shall be designed for a live load of 20 pounds per linear foot applied either horizontally or vertically downward at the top rail.

5. Guardrails used around floor openings will be erected on all unprotected edges of the hole, except on the side with a cover that can be locked in a vertical position and can provide equivalent fall protection. Note: cover must be at least 42 inches in height.

6. Guardrails may be temporary or permanent. Temporary guardrails may relocatable or job-made, and typically used while more permanent systems are being installed or

when work is of short duration or at a space not is not intended as a permanent work area.

7. The gap or opening between guardrail section shall not exceed four inches horizontally.

Access and egress openings in guardrails shall be equipped with a swinging, self-closing gate or shall be offset so that a person cannot walk directly into the opening.

B. Toeboards

Toeboards shall be installed along guardrail systems where employees are expected to walk or work below the elevated location to mitigate the hazard of being struck by falling tools or equipment that are kicked or dropped from above. Toeboards shall meet the following requirements:

1. Shall be constructed of wood, concrete, metal, or other suitable material.

2. Shall not be less than 3.5 inches above the level of the walking working surface.

3. Shall not be installed more than ¼-inch above the walking working surface. They shall be solid or have openings no more than 1 inch in the greatest dimension.

C. Covers

Where covers are required, the following standards shall be followed in accordance with CCR, Title 8, Section 3212:

1. Shall be designed by a qualified person and capable of supporting at least 400 pounds or twice the weight of the employee, equipment and materials imposed on one square foot.

2. Shall be secured to prevent accidental displacement.

3. Covers in the process areas shall only be opened by authorized persons.

4. Covers used in temporary construction shall bear painted or stenciled sign stating: “Opening – Do Not Remove”.

5. Shall not project more than one inches above the surface.

6. Covers shall be hinged and/or removable. Hinged covers shall have sufficient handles for opening and closing. Removable covers shall be equipped with rated lifting eyes.

When covers are not in place, the opening shall be constantly attended by an authorized person or protected by guardrails.

D. Scaffolding

Scaffolds shall be provided for work that cannot be performed safely by employees on permanent working surfaces, except where work can be performed safely from a ladder.

Scaffolds shall meet the following requirements, as well as additional design and construction criteria of CCR, Title 8, Section 1637 and 1640-1655:

1. Shall be secured, anchored, or braced to prevent from swaying, tipping, or collapsing.

2. Shall be made of stress-grade lumber or strong metal.

3. Planking shall be secured in place and extend over the end supports at least six inches and no more than twelve inches.

4. Shall not be erected, moved, dismantled, or altered except under the supervision of qualified persons.

5. Shall not be altered by removing uprights, braces or supports unless other members providing equivalent strength are substituted.

6. Shall be inspected by a Competent Person prior to each shift's use to identify scaffolding that is incomplete or unsafe and shall be removed from service until repairs are made.

7. Shall be able to support its own weight and four times its maximum intended load.

8. Shall not be overloaded or allowed to accumulate equipment/materials to where load requirements would be exceeded.

9. Shall be free of slip and trip hazards.

10. Shall be include a ladder or stairway for safe access and egress.

11. Shall have guardrails installed along all unenclosed or exposed sides of the scaffold where the work level height is 6 feet or more.

12. Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following shall apply:
    a. The area below the scaffold shall be barricaded, and employees shall not be allowed to enter the restricted area, or
    b. Toeboards shall be installed along the edge to protect employees below.

13. Shall not be used during periods of inclement weather (i.e., heavy rain, lightning storms, wind).

14. Shall have the appropriate safeguards in place to prevent the scaffolding from being struck by mobile equipment.

Persons possessing a certification of competence in scaffold erection, dismantling and use issued by trade associations, state-approved apprenticeship or training programs or similar training programs will be considered as a qualified person.

E. Aerial Lift Devices

1. Employees shall be trained in the proper use of the equipment and per the manufacturers operating instructions.

2. Work performed in proximity to energized electrical lines shall be in accordance with OC San Electrical Safety Program (SOP-205) and the minimum clearance distances established by CCR, Title 8, Section 1612.1.

3. Inspection, maintenance, and repairs shall only be performed by a qualified person.

4. The lifting devices shall be inspected prior to each use. Records of inspections shall be maintained for at least 3 years and include the date, deficiencies found, corrective actions and person performing the inspection.

5. Guardrails must be installed on all aerial lift devices. If the guardrail is less than 39 inches high, an approved personal fall protection system shall be implemented. Guardrails must not be removed or defeated.

6. Employees shall not sit, stand, or climb on the guardrails or use planks, ladders, or other devices to gain greater working height or reach.

7. Aerial lift devices that can extend 5 feet or more in height shall be equipped with upper and lower control devices. Lower control devices will serve to safely lower the platform from ground level in the event of an emergency.

8. Aerial lift devices shall not be used on an inclined surface, unless approved by the manufacturer. Personnel lifts shall only be used on stable ground where there is no risk of overturning.

9. During periods of high winds, storms or when covered in ice, lift operation shall be suspended.

10. When moving vehicles are present, the immediate work area shall be marked with warning devices (i.e., flags, cones) or barricades.

11. The number of employees in the personnel lift shall not exceed the safe working load.

12. Each employee working from a boom lift shall be protected from falling by a personal fall restraint system attached to anchor point designed to meet regulatory requirements.

13. OSHA currently does not require the use of personal fall restraint systems when operating scissor lifts. However, most scissor lift manufacturers highly recommend the use of restraint systems during operation. Certified anchorage points are provided in scissor lifts by the manufacturer. As such, OC San requires that employees operating scissor lifts be protected by a personal fall restraint system.

IX. Personal Fall Protection Systems

A. Personal Fall Restraint Systems

1. Fall restraint and horizontal/vertical lifeline systems shall be designed and installed under the supervision of a California Professional Engineer.

2. Fall restraint systems shall be limited to flat or low sloped working surfaces.

3. The fall restraint system shall include anchorage, connecting devices (lanyard/lifeline) and full body harnesses. Only approved connecting devices and full body harnesses are permitted.

4. The connecting device shall be of sufficient length to allow movement of the authorized person only as far as the sides of the working level or working area. The authorized person shall not be capable of reaching the fall hazard.

5. The connecting device may only be connected to the back D-ring of the fully body harness.

6. Non-certified anchorages are not permitted for horizontal or vertical lifeline systems.

B. Personal Fall Arrest Systems

1. Fall arrest systems shall be designed and installed under the supervision of a California Professional Engineer.

2. The fall arrest system shall be designed such that authorized person subjected to a fall shall not strike an obstruction or encounter a lower level or object.

3. The fall arrest system shall include anchorage, connecting devices (lanyard), deceleration device and full body harnesses. OC San employees must also have a descent control device attached to their full body harness. All equipment must be approved by Risk Management.

4. The connecting device shall be of sufficient length to allow movement of the authorized person only as far as the sides of the working level or working area. The authorized person shall not be capable of reaching the fall hazard.

5. The connecting device may only be connected to the back D-ring of the fully body harness.

6. Anchorages shall be independent of those being used to support or suspend platforms, and capable of supporting at least 5,000 pounds per employee attached or at least two times the maximum arresting force. *Note: Rescue system anchorage shall be capable of sustaining 5,000 pounds per employee or five times the intended load.*

7. The systems must be rigged so that employees cannot free-fall more than 6 feet or contact any lower level, and where applicable the anchor point shall be positioned at a level higher than the employee’s waist.

8. The system shall be designed to bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (shock-absorbing lanyards).

9. The system shall limit maximum arresting force on an employee to 1,800 pounds and withstand twice the potential impact energy of an employee free-falling 6 feet or the free fall distance permitted by the system, whichever is less.

10. Personal fall arrest systems and components subjected to impact loading will be immediately removed from service and will not be used again for employee protection

until inspected by a Competent Person and determined to be undamaged and suitable for re-use according to the manufacturers' specifications.

11. Personal fall arrest systems shall be inspected at least two times per year by a Competent Person. The date of the inspection shall be documented.

12. Any portion of a system involved in a fall will be taken out of service and replaced.

13. Personnel shall avoid carrying tools or sharp objects in their front or back pockets. Should a fall occur, these objects may become a puncture hazard.

C. Work Positioning Systems

1. Work positioning systems shall be designed and installed under the supervision of a California Professional Engineer.

2. Work positioning devices shall be rigged such that an employee cannot free fall more than two feet.

3. The use of non-locking snap hooks is prohibited.

4. Anchorage points for positioning device systems shall be capable of supporting at least two times the intended load or 3,000 pounds, whichever is greater.

X. Personal Fall Protection Equipment

A. Body Harnesses

1. Only ANSI-approved full body harnesses shall be used for personal fall protection systems.

2. Body harnesses shall be properly fitted to the user.

3. The full body harness shall be equipped with a descent control device for rescue.

4. The weight limit of the harness and other system components shall be determined and not exceeded. Weight limit is determined by calculating the body weight of the user and weight of any tools and materials being carried.

5. All full body harnesses must come equipped with both a back and front "D-ring".

6. Body or safety belts are not permitted for use as part of a personal fall protection system.

7. Harnesses should be equipped with suspension trauma safety straps.

B. Lanyards

1. Only ANSI-approved lanyards shall be used for personal fall protection.

2. Lanyards used for fall protection shall not exceed 6 feet in length and shall not exceed the distance from the anchor to the level below.

3. Lanyards shall be connected to secure anchor points in such a manner that will limit an employee free fall distance to 6 feet or less.

4. Lanyards shall be protected from abrasions, cuts, or deterioration caused by ultra-violet light, dirt, adverse weather conditions and chemicals.

5. Synthetic rope lanyards shall be rated to support at a minimum 900 pounds.

6. Lanyards with a shock absorbing device shall be used with the lanyard to reduce fall arresting forces to 500-600 pounds.

7. Lanyards shall be free from knots.

8. Lanyards shall not be tied back to themselves, except where designed to do so and approved by a qualified person.

9. Self-retracting lanyards shall only be attached using rated shackles or carabineers.

10. Lanyards shall only be connected to the “D” ring on a harness.

C. Self-Retracting Devices (Lifelines/Lanyards)

1. Only ANSI-approved self-retracting devices shall be used for personal fall protection.

2. Self-retracting devices that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device, with the line in the fully extended position.

3. Self-retracting devices that do not limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device, with the line or lanyard in the fully extended position.

4. Self-retracting devices shall not be used on horizontal or vertical lifeline systems unless the length of the lifeline on the drum of the device will not permit the worker to reach the hazard even when fully deployed.

5. Each employee shall be attached to a separate self-retracting device.

6. Self-retracting devices shall be protected against being cut or abraded.

D. Anchorage Systems

1. All anchorages shall be designed and certified by a California Professional Engineer regarding strength, location, and compatibility with fall protection equipment.
    a. Anchorage points for personal fall arrest systems shall be capable of supporting 5,000 pounds per employee attached.
    b. Anchorage systems for personal fall restraint systems shall be capable of supporting 4 times the intended load.
    c. Anchorage systems for horizontal lifeline systems shall be capable of supporting two times the maximum tension developed in the lifeline during a fall. The number of persons attached to a horizontal system shall be used in determining the maximum tension in the lifeline.

d. Vertical lifelines shall have a minimum breaking strength of at least 5,000 pounds.

2. The anchorage systems are to be inspected for physical damage by the user prior to each use and a documented inspection at a minimum frequency of 5 years and more frequently if environmental conditions warrant.

3. The correct placement of anchorage systems for personal fall arrest should be installed at or above shoulder height to reduce the fall distance. The anchor point should be in a manner to minimize swinging, should not be affected by the environment or contamination, and should prevent contact with lower level or an object.

4. The following may never be used as an anchor point:
    a. Top rails, midrails or vertical posts associated with a guardrail system
    b. Handrails or stair rails
    c. Ladders, except approved ladder safety systems
    d. C-Clamps
    e. Piping or conduit
    f. Wood structures
    g. Unistrut support systems

E. D-Rings and Snap hooks

1. D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.

2. D-rings and snap hooks shall be proof-tested to a minimum tensile strength of 3,600 pounds without cracking, breaking, or taking permanent deformation.

3. Snap hooks shall be of locking-type designed and used to prevent disengagement.

4. Snap hooks shall not be used unless they are a locking type and designed for the following connections:
    a. Directly to webbing, rope, or wire rope.
    b. To other snap hooks.
    c. To a D-ring to which another snap hook or other connector is attached.
    d. To a horizontal lifeline.
    e. To any object that is incompatibly shaped in relation to the snap hook.
    f. D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.
    g. Lanyard snap hooks shall not be wrapped around anchor points and connected back to the lanyard, except where designed for such use.

XI. Inspection, Maintenance and Storage

Fall protection equipment shall be inspected by the authorized person before each use to verify that it has not sustained any wear or damage that would require removal from service. These inspections are visual only, and not documented.

Fall protection equipment (including rescue equipment) shall be inspected twice annually by a Competent Person to verify the equipment is safe for use. The inspections shall be documented, and copies retained by the Division.

Horizontal and vertical lifelines shall be inspected prior to each use, and not to exceed annually for any degradation, and if necessary, replace damaged or worn parts. Check torque on any bolts against specification.

Inspections shall look for illegible or missing tags, elements affecting fit or function, defects or damage to hardware including cracks, sharp edges, corrosion, chemicals, elongation, alteration, heat, or excessive wear. Records of inspections shall be maintained throughout the service life of the equipment.

If inspections reveal damage or determined to be inadequate for service shall be tagged so equipment will not be returned to service. The Competent Person shall destroy the equipment.

The Competent Person shall verify that the equipment is maintained according to the manufacturer's instructions.

Equipment shall be stored in a manner that protects it from exposure to any conditions that could result in damage.

Anchorage systems shall be inspected by the authorized person prior to each use and by a qualified person or Competent Person at least annually or in accordance with the manufacturer's instructions. Inspections by qualified or Competent Persons shall be documented.

Damaged anchorages shall be repaired or replaced and recertified by a qualified person.

Anchorage inspections shall look for cracks, deformation or bending in the structure around the anchorage or if the connection is unstable or loose.

Equipment involved in a fall arrest incident must be taken out of service immediately and handled according to the manufacturer's instructions. Retractable lifelines/lanyards must be sent back to the manufacturer for repair and re-certification.

The service life of harnesses and lanyards is determined by the manufacturer and shall be discarded upon expiration. This information is found on a tag located on the device itself.

Fall protection equipment must be used in accordance with manufacturer instructions, including weight and size limitations, and must not be altered in any way without written manufacturer authorization.

XII. Roofs

Guardrail systems shall be provided for work within 6 feet of the roofs edge. When intermittent work is being performed, an approved fall restraint/arrest system may be implemented.

Intermittent refers to less than four times per year. Toeboards shall be installed at guardrail locations. Guardrails may be permanent or temporary. Routine walkways should be identified on the roofs. Parapet walls meeting the height and strength requirements of a guardrail are an acceptable form of fall protection.

Guardrails shall extend at least 6 feet beyond the areas occupied by employees accessing, servicing, or repairing permanently mounted rooftop equipment.

When roof access is provided along the roof edge, guardrails shall extend 6 feet on both sides along the roof edge. When roof access is provided through a roof hatch, guardrails shall be provided around the access hatch, except along the side with the hatch cover. A swinging gate shall be provided. Roof access and equipment hatches shall be protected according to Section X.

Personnel who need to travel beyond the protection of the guardrails must be protected by a personal fall arrest or restraint system.

Roof work shall be prohibited during lightning storms, heavy rain, high winds, or dense fog conditions. Roof work shall be prohibited after dusk, except during emergency repairs or planned work where all appropriate safety precautions have been implemented in advance (i.e., portable lighting). Use of a personal flashlight is acceptable as a back-up only.

If personal fall protection is utilized, provisions need to be made to protect people below from falling object hazards. This may include delineating surfaces below the elevation location or positively securing equipment/tools on the roof.

Skylights shall be protected according to Section XIII.

XIII. Skylights

Employees approaching within 6 feet of any skylight shall be protected from falling through the skylight via skylight screens, guardrails, or personal fall restraint systems.

Skylight screens may be installed above or below the skylight. *Note: when screens are installed below the skylight, the fall shall not impose an impalement hazard from the broken skylight to the worker who has fallen through the skylight and is lying on top of the screen.*

1. Skylight screens shall meet the strength requirements for a cover.

2. Skylight screens installed above the skylight shall not deflect downwards sufficiently to break the glass causing injury to the employee.

3. Skylight screens installed above the skylight shall have grill work no more than 4 inches by 4 inches or of slate work with openings more than 2 inches wide.

4. Skylight screens installed below the skylight shall have grill work with openings less than 12 inches in the least horizontal dimension.

XIV. Holes and Openings

A. Holes

Holes greater than 2 inches shall be protected by a cover, guardrail, or equivalent on all open sides.

Holes through which materials or tools may fall and create a hazard, or which a person's body may contact dangerous moving parts, shall be completely covered, except where hoppers, guardrails, or gratings less than 1 inch by 5 inches are installed.

Holes through which power transmission equipment passes may be guarded by toeboards only, provided that the opening is less than 12 inches in the least dimension.

B. Openings

Openings in the floor or roof that are greater than 12 inches in the least horizontal dimension shall be provided with a cover and/or guardrail system.

The following fall protection systems shall be implemented when the cover is removed:

1. If personnel or equipment are required to pass through the opening, temporary or permanent guardrails shall be installed around the cover before the cover is removed.

2. If the opening is used to facilitate inspections, gauging, servicing, sampling, or cleaning activities, temporary guardrails or personal fall restraint systems shall be installed before the cover is removed.

3. Fall protection gratings, which reduce the overall size of the opening to less than 12 inches, may be installed below the cover. The gratings reduce the severity of injury from a fall hazard to a trip hazard. The grating is not capable of being walked on but prevents falls to a lower level.

Openings in a wall that are at least 30 inches high, and 18 inches wide shall be protected by a cover and/or guardrail. When the cover is removed, guardrails systems or personal fall restraint systems shall be in place before the cover is removed.

XV. Elevated Platforms

Platforms shall be provided for every permanent elevated work location, where there is machinery, equipment or materials which are operated or frequently repaired, serviced, adjusted, or otherwise handled.

Platforms shall be installed with standard guardrails and toeboards on all sides exposed to a fall hazard.

Personal fall protection is not required when working on a platform equipped with standard guardrails, except where employees are required to perform work outside of the guardrail system, as such personal fall protection shall be utilized. Anchor points shall be certified, and an approved fall protection system used.

All fixed ladders shall have self-closing swinging gates at top of ladders. Chains are not an acceptable substitute for ladder gates.

Holes and openings in the platform shall be protected according to Section XIV.

XVI. Roofing Operations, Leading Edge Work and Precast Concrete Erection

Employees shall be protected from falls to a lower level by guardrail systems, personal fall arrest systems, body positioning devices, warning line systems, or controlled access zones.

Warning line systems shall be designed and constructed per the following and in accordance with CCR, Title 8, Section 1730:

1. Employees shall be trained and instructed on such use.

2. Warning lines shall be installed with rope, wire, or similar material, and flagged with highly visible material hanging from the line no more than 6-foot intervals.

3. Warning line shall be installed no less than 6 feet from the roof edge.

4. Warning Line shall be rigged and supported in such a way that its lowest point including sag is no less than 34 inches from the walking surface and its highest point is no more than 39 inches from the walking surface.

5. After being erected warning line stanchions shall be capable of resisting without tip over a force of at least 16 pounds.

6. Warning line shall have a minimum tensile strength of 500 pounds and after being attached to the stanchion, shall be capable of supporting 16 pounds without breaking.

7. No work or work-related activity is to take place in the area between the warning line and the edge.

8. The use of warning lines closer than 6 feet from the edge is not permitted as substitute for conventional fall protection for work other than roof construction/repair.

Controlled access zones shall be designed and constructed per the following and in accordance with CCR, Title 8, Section 1671.2:

1. Access to areas where leading edge and other operations are taking place shall be controlled by a control line or other means to restrict access.

2. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

3. Lines shall be erected no less than every 6 feet or more than 25 feet from the unprotected edge, except when erecting precast concrete, the control line may be extended to no more than 60 feet, or half the length of the member being erected.

4. The control line shall extend parallel along the entire length of the unprotected edge.

5. The control line shall be attached on each side to a standard railing or wall, or securely anchored.

6. Control lines may consist of rope, wires, tape or equivalent.

7. Each line shall be flagged or marked at no more than 6-foot intervals with highly visible material.

8. The control line shall be rigged and supported that is installed and maintained between 39 and 45 inches from the working level.

9. Each line shall have a breaking strength of 200 pounds.

10. Each employer shall designate a Competent Person (safety monitor) to monitor the safety of other employees. The safety monitor shall:
    a. Be competent to recognize fall hazards
    b. Warn employees when it appears they are or have become unaware of a fall hazard.
    c. Stay within visual distance of the employee and maintain communication with employees being monitored.
    d. Have no other responsibilities except to serve as the safety monitor.
    e. Ensure that only employees covered by the fall protection plan are permitted in the controlled access zone.

A fall protection plan must be submitted to Risk Management for approval of personal fall arrest systems, body positioning devices, warning line systems or controlled access zones.

XVII. Excavations and Trenches

Excavations and trenches 6 feet or more in depth shall be protected by fencing, barriers (i.e., concrete k-rail, a-frame barrier, or roadway barricade), guardrail system, or combination thereof. *Note: Sheet pile, trench box, or slide rail system manufacturers may permit the installation of guardrails systems.*

The excavation Competent Person shall determine the degree of hazard and implement an effective method of control. Additional hazards (i.e., traffic, pedestrians) should be included in the control method selected.

Personnel shall travel directly to the point of entry of the excavation.

Protection shall be provided to protect employees from loose rock or soil that could pose a falling hazard. Spoil piles shall be maintained no closer than 2 feet from the excavation edge.

A stairway, ladder, ramp, or other safe means of egress shall be in trench excavations that are 4 feet or more in depth to require no more than 25 feet of lateral travel for employees.

Equipment operators shall maintain three points of contact when climbing in or out of equipment. Operators shall always face the equipment.

XVIII. Variance for Temporary Opening for Manholes

Manholes located throughout the OC San treatment plants, pump stations and collection system which are briefly opened to perform visual inspection can be performed without a guardrail system or personal fall protection, given all the following requirements are met:

1. The manhole can be removed using a tool designated for such removal (i.e., manhole puller).

2. The inspection is of short duration (less than 2-3 minutes).

3. Only a visual inspection is performed and does not require tools, equipment, or other materials to break the plane of the manhole.

4. The opened manhole must not be left unattended at any time during inspection.

5. The buddy system is used, meaning one employee removes the manhole and performs the inspection while a second employee is present in the work area to keep unauthorized persons away and to initiate emergency notification procedures for a fallen employee, should a fall occur.

The manhole cover should only be removed enough to perform visual inspection and return the manhole cover to the closed position as soon as the inspection is complete.

If the manhole is to remain open longer than the 2-3 minutes or tools, equipment and other materials breaks the plane of the manhole, a temporary manhole cover, guardrail system, barricade or personal fall protection system shall be implemented.

XIX. Hoisting Personnel

Hoisting personnel is prohibited except where it can be demonstrated that the erection, use or dismantling of conventional fall protection (i.e., ladder, aerial lift device, scaffold, would be more hazardous or is not possible based on structural design or worksite conditions.

Personnel platforms used to hoist employees shall:

1. Qualified person shall design the personnel platform and attachments.

2. Platform shall be designed to prevent tipping during employee occupant movement.

3. Personnel platform shall be capable of support its own weight and at least five times the maximum intended load.

4. Personnel platform shall be equipped with a guardrail system and personal fall arrest system.

The hoisting equipment shall be uniformly level, within one percent of level grade, and located on footing that a qualified person has determined to be sufficiently firm and stable. The hoisting equipment, where equipped with outriggers or stabilizers, shall have them all extended and locked.

Total load (platform, hook, load line and rigging) shall not exceed 50% percent of the rated capacity for the radius and configuration of equipment.

Hoisting personnel without a personnel platform is prohibited. When the personnel platform is in a stationary working position, the load, boom, swing, and secondary braking shall be engaged.

The hoist shall be equipped with devices to indicate extended length, anti-two-block devices, and controlled load lowering device. Hooks shall be closed and locked when attached. Shackles shall have retaining pin to prevent accidental removal.

Materials and tools shall be secured to prevent displacement.

Trail lifts and inspections shall be performed prior to lifting personnel. The trail lift shall be conducted unoccupied and throughout the distance personnel are to be moved to. Visual inspections shall be completed immediately prior to each lift.

Hoisting shall be performed in a slow and controlled manner. Occupants must keep all body parts in the platform during movement. Personnel shall not be hoisted during high winds, rain, or lightning events.

Pre-lift meetings shall be held prior to the hoisting personnel to discuss applicable requirements of CCR, Title 8, Section 1616.6, which includes the equipment operator, signal person, hoisted personnel, and management.

XX. Training

A. Competent Persons

Training shall include:

1. Fall protection hierarchy of controls.
2. Applicable fall protection regulations and standards.
3. How to survey fall hazards.
4. Roles and responsibilities.
5. Inspection of equipment components and systems.
6. Fall protection assessments and determining if a system is safe or unsafe for use.
7. Implementing fall protection and rescue procedures.
8. Equipment and practices applicable to fall protection.
9. Inspections and performance limitations of equipment.
10. Capable of identifying fall hazards and completing fall protection plans.
11. Calculating maximum deceleration and arrest distances for fall arrest systems.
12. Methods to control free fall and arresting forces.
13. Principles of 100% fall protection and how to remain protected while transferring from one system to the other.

B. Qualified Persons

Qualified person training shall include:

1. Fall protection hierarchy of controls.
2. Applicable fall protection regulations and standards.
3. Roles and responsibilities.

4. Equipment and practices applicable to fall protection.
5. Inspections and performance limitations of equipment.
6. Identification of fall hazards.
7. Conducting fall hazard surveys, fall protection and rescue plans.
8. Fall protection system selection.
9. Calculation of required clearance and deceleration distances for fall arrest systems.
10. Designing, selecting, and analyzing anchorages.
11. Assessing system combability.
12. Designing new and evaluating existing horizontal and vertical lifelines.
13. Documented inspection of equipment.
14. Determining swing and impact forces.
15. Developing engineering system standards.
16. Accident/incident investigations.

C. Authorized Persons

Personnel performing work at heights shall be trained in specific fall protection applications and equipment associated with their job. Training shall include the following:

1. Roles and responsibilities.
2. Recognition of fall hazards.
3. Applicable fall protection regulations and standards.
4. Safe work practices including fall prevention and control methods.
5. Use and application of fall protection equipment.
6. Requirements for selection, inspection, and maintenance.
7. Requirements for rescue and fall protection and rescue procedures.
8. Any specific manufacturer’s instructions for equipment.
9. Employees shall demonstrate an understanding of the training and use of equipment applicable to their job. This may be accomplished through a documented exam or documented practical demonstration.

D. Authorized Rescuers

Authorized rescuers shall receive training before they are exposed to a fall hazard or a potential rescue event. Rescue training shall include:

1. Fall hazard recognition.
2. Fall protection hierarchy of controls.
3. Applicable fall protection and rescue regulations and standards.
4. Roles and responsibilities.
5. The use of fall protection and rescue procedures.
6. Location rescue system assembly and use.
7. Before use inspection of local rescue systems.
8. Equipment and practices applicable to work.
9. Instruction and performance limitations of equipment.
10. Capable of identifying fall hazards and completing fall protection plans.
11. Calculating maximum deceleration and arrest distances for fall arrest systems.
12. Methods to control free fall and arresting forces.
13. Principles of 100% fall protection and how to remain protected while transferring from one system to the other.

E. Aerial Lift Devices

Lift operators shall be trained by a designated Competent Person. Only trained and authorized persons can operate an aerial lift. Training should include:

1. Explanations of electrical, fall, and falling object hazards.
2. Procedures for dealing with hazards.
3. Recognizing and avoiding unsafe conditions in the work setting.
4. Instructions for correct operation of the lift (including maximum intended load and load capacity).
5. Demonstrations of the skills and knowledge needed to operate the lift before operating it on the job.
6. When and now to perform inspections.
7. Manufacturer’s requirements.

F. Retraining

Retraining will be provided if any of the below conditions are met.

1. when changes in the workplace or new installations render previous training obsolete.

2. when changes in the types of fall protection equipment to be used render previous training obsolete.

3. when workplace observations or incidents indicate that employees have not retained an understanding of the skills acquired through their initial training.

4. when an accident occurs during aerial lift use.

5. when workplace hazards involving an aerial lift are discovered.

6. when a different type of lift is used.

Supervision, with consultation of Risk Management, will determine if retraining will be assigned to an individual, group or Division of employees.

The retraining may be formal, informal, onsite, online or distributed via SAFE Bulletin or Safety Gram.

G. Training Schedule

If none of the conditions listed above in the retraining section are applicable, the duration for retraining shall be conducted as follows:

1. Authorized persons every 2 years

2. Competent Persons every 2 years

3. Rescue persons every 2 years with annual drill

XXI. Falls on Same Level

To prevent falls on the same level, authorized persons shall implement the following controls:

1. Maintain clear, tidy work areas free of trash, debris, and tools.

2. Wear proper footwear with good traction.

3. Perform housekeeping of work areas frequently.

4. Maintain floors free of oil and grease.

5. Clean up spills promptly, including deployment of signs and/or cones until the spill is cleaned up.

6. Cover or secure cables, conduits or piping that cross walkway.

7. Maintain adequate illumination at walking working surfaces. Use a flashlight or headlight when working at night or navigating tunnels.

8. Mark/highlight change in elevations or transitions with anti-skid paint, coatings, or strips.

XXII. Fall Protection Plan

A fall protection plan should be developed where passive fall protection systems are impractical or creates a greater hazard. The plan should be completed for all fall restraint, fall arrest, work positioning and horizontal/vertical lifeline systems, as well as during non-routine tasks requiring bypass of existing fall protection systems.

The fall protection plan will be completed by a Competent Person, developed specifically for the work area where fall protection is required, and completed prior to the start of work.

The plan shall be submitted to Risk Management for review and approval, and contain the following:

1. Description of the fall hazard.

2. Description of measure that will be implemented to reduce or eliminate the fall hazard with personal fall protection systems, scaffolding, ladders, aerial lift devices, warning line systems or controlled access zones.

3. Qualified Person shall determine structures are safe to access and calculate anchorage limitations or requirements, where applicable.

4. Competent Person to calculate total fall distance for protection of employee using fall arrest equipment to prevent contact with the ground or lower-level structure, where applicable.

5. Impact of adverse weather conditions such as wind and rain during elevated work.

6. Post-Fall Emergency Response - Rescue plan.

XXIII. Rescue Plan and Procedures for Falls

A. General

Before work beings, necessary rescue equipment should be determined and made available at the work area.

Outside emergency services should not be relied upon to provide rescue services. Rescue shall be provided by trained workers or a third-party rescue provider. If a third-party rescue provider is used, they must be onsite during work requiring rescue.

Appropriate emergency rescue procedures shall be in place for an emergency rescue of a person using a fall-arrest system or aerial lift device, as follows:

1. Rescue shall be provided in less than six minutes to prevent suspension trauma. For most work, this shall necessitate a full-time safety watch.

2. If a rescue cannot be performed in less than six minutes, the fall-arrest system shall have a device that automatically lowers the person to the ground safety.

3. If compliance with the above cannot be achieved, a safe and alternative working procedure shall be used.

4. Emergency rescue procedures shall consider the immediate rescue of a person after an arrested fall without the need to rely on emergency services or appropriately trained and competent standby rescue teams.

5. The rescue plan shall be included as part of the fall protection plan. The following are examples of rescue that may be used:
    a. Self-Rescue
    b. Assisted Self-Rescue
    c. Assisted Rescue (unconscious)
    d. Scissor or Boom Lift Rescue

B. Confined Space Entries

Confined spaces that are 5 feet or more in depth shall require the use of a mechanical retrieval device for both fall arrest and rescue. Exception - The required use of a mechanical retrieval device can be circumvented, if the entry supervisor can justify that its use poses a greater hazard to the entrant(s).

The confined space entry supervisor shall be responsible for developing an alternate method for fall protection and rescue as well as provide the required fall protection, rescue equipment and personnel if a mechanical retrieval device is not used.

C. Suspension Trauma

Suspension trauma occurs when a person has an arrested fall and is suspended in a vertical position, which causes the body harness straps to put pressure on veins in the legs limiting return blood flow to the heart. When blood flow is restricted, the body slows the heart causing a person to faint which can occur in a few minutes. This can lead to renal failure and eventually death, depending on the person's body.

XXIV. Audit and Program Review

The Elevated Work and Fall Protection Program shall be reviewed annually to determine effectiveness and identify improvement opportunities based on performance and feedback mechanisms.

Any changes in the Elevated Work and Fall Protection Program shall be communicated to all affected employees

XXV. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XXVI. Exceptions

This procedure does not apply when employees are inspecting, investigating, or assessing workplace conditions prior to the actual implementation of fall protection systems. Employees engaged in inspecting, investigating, and assessing workplace conditions before the actual work begins or after work has been completed are exposed to fall hazards for very short durations, if at all, since they are able to accomplish their work without going near the danger zone.

XXVII. References

California Code of Regulations (CCR), Title 8, Section 1670, Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices

CCR, Title 8, Section 1671.1, Fall Protection Plan

CCR, Title 8, Section 1671.2, Controlled Access Zones and Safety Monitoring Systems

CCR, Title 8, Section 1678, Extension Ladders

CCR, Title 8, Section 1730, Roof Hazards

CCR, Title 8, Section 3207, Definitions

CCR, Title 8, Section 3209, Standard Guardrails

CCR, Title 8, Section 3210, Guardrails at Elevated Locations

CCR, Title 8, Section 3211, Wall Openings

CCR, Title 8, Section 3212, Floor Openings, Floor Holes and Roofs

CCR, Title 8, Section 3213, Service Pits and Yard Surface Openings

CCR, Title 8, Section 3214, Stair Rails and Handrails

CCR, Title 8, Section 3271, Openings

CCR, Title 8, Section 3272, Aisles, Walkways and Crawlways

CCR, Title 8, Section 3275, Scaffolds

CCR, Title 8, Article 24, Elevating Work Platforms and Aerial Devices, Sections 3636 - 3648

XXVIII. Revision History

Version	Date	By	Reason
1.0	08/24/2008	Carnahan, Pat	New
2.0	04/15/2014	Parker	Program Update
3.0	08/13/2018	Frattali, John	Program Update
4.0	01/15/2019	Frattali, John	Annual Program Update – no changes
5.0	11/02/2020	Frattali, John	Periodic Update – Refer to Program Change Log
6.0	11/19/2021	Frattali, John	Annual Program Update – no changes

OCSAN ORANGE COUNTY SANITATION DISTRICT	SOP-641 (Ver. 2) Heat Illness Prevention Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The purpose of this Heat Illness Prevention Program (the Program) is to prevent heat-related illness and fatalities resulting from heat hazards common in indoor and outdoor work environments. Title 8 of the California Code of Regulations (CCR), Section 3395 (8 CCR 3395) requires California employers to establish, implement, and maintain an effective Heat Illness Prevention Program. Additional proposed regulations have been drafted by California Occupational Safety and Health Administration (CAL/OSHA) for Heat Illness Prevention Indoors, and CAL/OSHA is currently (as of June 2019) preparing rulemaking based on this draft.

The Program is intended to assist in complying with 8 CCR 3395 for Heat Illness Prevention. The Program establishes procedures and provides information necessary to educate employees in the recognition and prevention of heat-related illness and to ensure their own safety and the safety of others.

II. Applicability

This Program applies to all OCSD employees and Contractors whose primary job assignment involves outdoor work where temperatures equal or exceeds 80 degrees Fahrenheit (°F) and indoor work areas where the temperature equals or exceeds 82°F (when employees are present).

III. Definitions

Acclimatization: temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

Clothing that Restricts Heat Removal: means full-body clothing covering the arms, legs, and torso that is any of the following: (1) waterproof; (2) designed to protect the wearer from a chemical, biological, radiological, or fire hazard; or (3) designed to protect the wearer or the work process from contamination. Exception: “Clothing that restricts heat removal” does not include clothing with flame or arc-flash resistant properties demonstrated by the employer to be all the following: (1) constructed only of knit or woven fibers; (2) worn in lieu of the employee’s street clothing; and (3) worn without a full-body thermal or moisture barrier.

Cool-down Area: indoor or outdoor area that is blocked from direct sunlight and shielded from other high radiant heat sources and is either open to the air or provided with ventilation or cooling. One indicator that blockage is sufficient is when objects do not cast a shadow in

blocked sunlight. A cool-down area does not include a location where environmental risk factors defeat the purpose of allowing the body to cool, employees are exposed to unsafe or unhealthy conditions, employees are deterred or discouraged from accessing or using the cool-down area.

Engineering Controls: means an aspect of the work area or a device that removes or reduces hazardous conditions or creates a barrier between the employee and the hazard. Examples of engineering controls that may be effective at minimizing the risk of heat illness in a particular work area include, but are not limited to, isolation of hot processes, isolation of employees from sources of heat, air conditioning, cooling fans, cooling mist fans, evaporative coolers (also called swamp coolers), natural ventilation where the outdoor temperature or heat index is lower than the indoor temperature or heat index, local exhaust ventilation, shielding from a radiant heat source, and insulation of hot surfaces.

Environmental Risk Factors for Heat Illness: working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

Heat Cramps: Heat cramps affect people who sweat a lot during strenuous work activity. Sweating makes the body loose salts and fluids and minerals. If only the fluids are replaced and not the salts and minerals painful muscles cramps may result.

High Heat Procedures: implementation of mandatory actions when the outdoor temperature reaches 95 degrees Fahrenheit or higher.

Heat Exhaustion: a condition whose symptoms may include heavy sweating and a rapid pulse, a result of your body overheating. It is one of the three heat-related syndromes, with heat cramps being the mildest and heatstroke being the most severe.

Heat Illness: a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

Heat Index: a measure of heat stress developed used by the National Weather Service for outdoor environments that considers the dry bulb temperature and the relative humidity. For purposes of this standard, heat index refers to conditions in indoor work areas. Radiant heat is not included in the heat index.

Heat Rash (Prickly Heat): - a skin irritation caused by excessive sweating and clogged pores during hot, humid weather.

Heat Stress: a situation where too much heat is absorbed by a person, a plant or an animal and causes stress, illness or even death. It can also cause heat cramps, heat exhaustion and heat stroke.

Heat Stroke: a type of severe heat illness that results in a body temperature greater than 104°F and confusion. Other symptoms include red, dry, or damp skin, headache, and dizziness. Onset can be sudden or gradual. Complications may include seizures, rhabdomyolysis, or kidney failure. Heat stroke occurs because of high external temperatures or physical exertion. Risk factors include heat waves, high humidity, certain drugs, alcohol, heart disease and skin disorders.

Heat Wave: any day in which the predicted high outdoor temperature for the day 80 degrees Fahrenheit or greater and at least ten degrees Fahrenheit higher than the average high daily outdoor temperature in the preceding five days.

Indoor: refers to a space that is under a ceiling or overhead covering that restricts airflow; and is enclosed along its entire perimeter by walls, doors, windows, dividers, or other physical barriers that restrict air flow, whether open or closed. All work areas that are not indoor are considered outdoor and covered by 8 CCR 3395. Exception: Indoor does not refer to a shaded area that meets the requirements of 8 CCR 3395 and is used exclusively as a source of shade for employees covered by 8 CCR 3395.

Personal Risk Factors for Heat Illness: factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat**.**

Preventative Cool-down Rest: a rest break taken in a cool-down area to prevent overheating.

Radiant Heat: heat transmitted by electromagnetic waves and not transmitted by conduction or convection. Sources of radiant heat include the sun, hot objects, hot liquids, and fire.

Recovery Period: a period to rest and recover from the heat to prevent heat illness.

Relative Humidity: the amount of moisture in the air relative to the amount that would be present if the air were saturated.

Shade: blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in blocked sunlight. Shade is not adequate when heat in shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions and that does not deter or discourage access or use.

Shielding: a physical barrier between radiant heat sources and employees that reduces the transmission of radiant heat.

Temperature: the dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

IV. Roles and Responsibilities

A. Risk Management

- Prepare and maintain a written program which complies with the requirements of applicable CAL/OSHA standards.
- Assist with providing training materials and training potentially impacted employees and their supervisors on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.

B. Supervisors

- Ensure all requirements of this Program are followed.
- Identify all employees who are required to work outdoors where potential heat illness could occur.
- Ensure that chilled potable water and shade are available at the job site when the environmental risk factors for heat illness are present.
- Ensure that emergency response procedures are in place to respond to employees who may be affected by heat-related illness.
- Ensure all affected employees have received proper training on heat illness prevention.

C. Employees

- Comply with the provisions of this Heat Illness Prevention Program, as described in this document, written procedures, and training received.
- Verify they have drinking water available at all times when the environmental risk factors for heat illness are present and report water supply deficiencies to their supervisor.
- Verify they have access to a shaded area to prevent or recover from heat-related symptoms and report to their supervisor any inadequate shade conditions.
- Reporting heat-related illness symptoms to their supervisor.

V. Risk Factors

Each employee and work task have unique characteristics that affect the susceptibility to heat-related illness. The following factors should be considered when evaluating the risk of heat-related illness:

A. Personal Factors

- Age (very young and elderly more affected)
- Personal Health / Fitness / Obesity
- Personal Stress
- Dehydration
- Alcohol Use
- Certain Drugs, Medications, or Supplements
- Lack of Acclimatization to Hot Weather or Hot Weather Work

B. Environmental Risk Factors

- Temperature
- Humidity
- Air Velocity
- Radiant Heat Sources (sunlight, reflection, etc.)

C. Job-Related Risk Factors

- Duration of Activity
- Metabolic Load (how strenuous work is)
- Wearing Heavy Attire or Personal Protective Equipment (PPE)

VI. Prevention

The following steps should be taken to prevent heat-related illness:

A. Acclimate yourself: It takes several days of being exposed to hot weather work to become accustomed to it. Begin with short durations of hot weather work and gradually increase your exposure time to allow your body to become accustomed.

B. Schedule Activities: Schedule vigorous outdoor activity for cooler times of the day, such as early morning, when possible. Work/rest schedules should be adjusted in correlation to increasing temperatures. Cycles of shorter work shifts, and more frequent rest periods are preferable.

C. Monitor the Weather: Check the forecast and review the Heat Index (see Attachments, Table 1). The Heat Index chart will indicate when combinations of heat and humidity can be dangerous for employees. Realize that direct sun can add as much as 15 degrees to the heat index.

D. Protect Yourself: Use sunscreen with a sun protection factor (SPF) of 15 or more. Relocate working areas to the shade if possible.

E. Hydrate: Drink fresh water or other liquids every 15-20 minutes, even if you do not feel thirsty. Drink a minimum of 1 quart of fresh water every hour. Drink plenty of water before starting work activities and drink water throughout the day. When the work environment is hot and employees are likely to be sweating more than usual, employees should understand the importance of frequent hydration of small quantities of water, up to 4 cups per hour. Avoid beverages containing caffeine (such as tea, coffee, or cola).

F. Monitor Coworkers: Use a “buddy system” so that workers and supervisors can monitor each other when out in the field.

VII. Program

The following elements of the OCSD Program for heat illness prevention provide specific information for divisions and supervisors complying with the program:

A. Provision of Water

Whenever environmental risk factors for heat illness exist, supervisors are responsible to ensure that fresh, pure, and suitably cool potable water and located as close as practicable to where employees are working, with exceptions when employers can demonstrate infeasibility.

Where unlimited drinking water is not immediately available from a plumbed system, supervisors must provide enough water for every employee to be able to drink one quart of water per hour for the entire shift (at least 2 gallons per employee for an 8-hour shift). Smaller quantities of water may be provided at the beginning of the shift if there are effective procedures for replenishing the water supply during the shift as needed.

The CAL/OSHA standard requires not only that water be provided, but that supervisors encourage employees to drink frequently. Employees must understand that thirst is not an effective indicator of a persons need for water and it is recommended that individuals drink one quart of water, or four 8-ounce cups, per hour when working in hot environments.

OCSD employees one or more of the following steps to ensure employees have access to drinking water:

- Supply water cooler/dispenser and single service cups.
- Supply sealed one time use water containers (i.e., bottled water).

Drinking water and water dispensers shall meet the following requirements:

- All sources of drinking water shall be maintained in a clean and sanitary condition
- Drinking water must always be kept cool. When temperatures exceed 90° F it is recommended that ice be provided to keep bottles of water cool.
- Potable drinking water dispensers used to provide water to more than one person shall be equipped with a spigot or faucet.
- Any container (ice chest) used to store or dispense drinking water shall be clearly marked as to the nature of its contents and shall not be used for any other purpose.
- Dipping or pouring drinking water from containers, such as barrels, pails, or tanks, is prohibited regardless of whether the containers are fitted with covers.
- The use of shared cups, glasses or other vessels for drinking purposes is prohibited.
- Non-potable water shall not be used for drinking.
- Non-potable water outlets shall be posted in a manner understandable to all employees that the water is unsafe for drinking.

Field crews must make provisions for drinking water using either the bottled water or portable water coolers. Bottled water is available through the Warehouse. An electrolyte replacement additive (i.e., Sqwinchers®) is also available through the Warehouse at no cost to employees.

B. Access to Shade (Outdoors) or Cool Down Areas (Indoors)

Access to rest and shade or other cooling measures are important preventive steps to minimize the risk of heat-related illnesses. Supervisors are responsible to ensure that employees have access to a shaded area when the temperature reaches 80 degrees. Shaded areas shall accommodate all employees on recovery periods and meal periods and allow employees to sit in the shade without touching each other.

The nearest shaded area must be as close as practicable. Usually this will mean that shade must be reachable within a 2 1/2-minute walk, but in no case more than 1/4-mile or a five-minute walk away, whichever is shorter.

Canopies, umbrellas, or other temporary structures may be used to provide shade, provided they block direct sunlight. Trees and dense vines can provide shade if the canopy of the trees is sufficiently dense to provide substantially complete blockage of direct sunlight. Areas shaded by artificial or mechanical means, such as by a pop-up canopy as opposed to a tree, must provide means for employees to avoid contact with bare soil.

Employees suffering from heat illness or believing a preventative recovery period is needed can use an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than ten minutes. Such access to shade shall always be permitted.

Plant personnel can utilize air-conditioned office/break areas for this purpose. Field crews shall establish umbrella areas or utilize the truck cab with air conditioning. Additional measures to protect employees include the use of wide brim straw hats or sun shields on hard hats, where

hard hats are required. Employees may obtain wide brim straw hats or sun shield for their hard hats at no cost from the Warehouse. Sun block is also available from the Warehouse.

C. Procedure for Acclimatization:

Acclimatization refers to the physiological adaptation that occurs when an individual accustomed to working in a cool environment is exposed to a hot environment. Any individual may develop signs of significant strain with abnormally high body temperature, pounding heart, and other signs of heat stress when beginning to work in a hot environment.

Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat. On each succeeding day in the hot area, his or her ability to adjust to the hot environment improves and the signs of discomfort and strain diminish. Workers who were previously fully acclimatized are at risk for heat illness during a heat wave because during a heat wave, the body does not have enough time to adjust to a sudden, abnormally high temperature or other extreme conditions.

An acclimatization period may also be necessary upon return from vacation or other extended periods away from the workplace.

An employee who has been newly assigned to a high heat work area or conditions (e.g., during a heat wave) indoors will be closely observed by a supervisor or designee for the first 14 days of employment.

D. Preventative Cool-Down Rest Periods

The purpose of the cool-down rest period is prevention of heat illness. The supervisor is required to provide access to shade for employees who believe they need a preventive cool-down rest period from the effects of heat and for any who exhibit indications of heat illness. Employees taking a “preventative cool-down rest” must be monitored for symptoms of heat illness, encouraged to remain in the shade and not ordered back to work until symptoms are gone. Access to shade must always be allowed, and employees must be allowed to remain in the shade for at least five minutes.

The purpose of the preventive cool-down rest period is to reduce heat stress on the employee. The preventive cool-down rest period is not a substitute for medical treatment. Employees who exhibit signs of heat illness shall not be permitted to leave work, except where seeking medical attention. Employees shall not drive themselves to the hospital.

E. High Heat Procedures

High heat procedures are additional preventative measures that OCSD will take when the temperature equals or exceeds 95 degrees Fahrenheit. These procedures will include the following to the extent practicable:

- At least one employee or member of work crew must have electronic communication device.
- Employees must be regularly observed or checked for signs or symptoms of heat-related illness. Use a “buddy system” so that workers and supervisors can monitor each other when out in the field.
- Designate one or more employees per work area to call for emergency medical assistance.

- Supervisor must remind employees to drink sufficient water.
- Conduct tailgate meeting at beginning of shift to review high-heat procedures, including importance of drinking water and taking cool-down rests as needed.
- Employees shall take a minimum ten-minute net preventative cool-down rest period every two hours. The rest period required may be provided concurrently with any other meal or rest period if the timing coincides with a required meal or rest period.

F. Heat Index Monitoring

Current and forecasted temperature outdoors or temperature indoors, as well as outdoor heat index, shall be ascertained by the following methods:

- Website(s) and phone web app(s) approved by Risk Management to include the National Weather Service (www.weather.gov) for current outdoor and forecasted temperature and heat index.
- Indoor hand-held or wall-mounted thermometer approved by Risk Management.
- Wet Bulb Globe Thermometer (WBGT) operated by Risk Management.
- Weather outlook provided by Risk Management meteorologist.

G. Engineering and Administrative Controls, and Personal Protective Equipment (PPE)

The most effective way to prevent heat-related illness and fatality is to reduce heat stress in the workplace (e.g., increase air movement, reduce temperature, reduce humidity, and protect workers from solar radiation or other radiant heat sources). The following are some engineering controls that may reduce heat stress:

- Use air conditioning
- Increase general ventilation
- Provide cooling fans
- Run local exhaust ventilation where heat is produced
- Use reflective shields to block radiant heat
- Insulate hot surfaces and pipes
- Stop leaking steam
- Provide shade for outdoor work sites

When engineering controls are not feasible or practical, administrative controls are another way to prevent a worker's core body temperature from rising. Some administrative controls that may reduce heat illness include:

- Acclimatize workers starting the first day working in the heat
- Re-acclimatize workers after extended absences
- Schedule work earlier or later in the day
- Use work/rest schedules
- Limit strenuous work (e.g., carrying heavy loads)
- Use relief workers when needed

When engineering and administrative controls are not enough, PPE is a way to provide supplemental protection. PPE that can reduce heat stress include:

- Cooling vests

- Hard hat visors and neck shades
- Light colored clothing
- Sunscreen

H. Protective Measures

The National Weather Service heat index chart, color coded by risk level, is provided in Attachment A. Engineering and administrative controls will be implemented based on the determined heat index value:

- Heat Index Less Than 91°F (Risk Level: Low)
    - Provide adequate amounts of drinking water.
    - Ensure that adequate medical services are available.
    - Check weather forecast regularly to determine if more extreme hot weather is predicted.
    - Encourage workers to wear sunscreen and use other protections from direct sunlight.
    - Train workers to recognize symptoms of heat-related illness.
- Heat Index 91°F to 103°F (Risk Level: Moderate)
    - All measures listed under Low Risk Level.
    - Alert workers of heat index predicted and identify each precaution in place to reduce risk of heat-related illness.
    - Remind workers to drink small amounts of water often.
    - Respond to heat-related illness and medical emergencies without delay.
    - Review heat-related illness signs and symptoms and site-specific precautions during daily meetings.
    - Schedule frequent rest breaks in cool, shaded areas.
    - Acclimatize new and returning workers.
    - Setup a buddy system, to ensure workers look out for signs and symptoms. Instruct workers to watch workers for signs and symptoms.
- Heat Index 103°F to 115°F (Risk Level: High)
    - All measures listed under Moderate Risk Level.
    - Have a knowledgeable person onsite who is well-informed about heat-related illness and authorized to modify work activities.
    - Establish and enforce work/rest schedules.
    - Adjust work activities to reduce worker risk.
- Heat Index Greater Than 115°F (Risk Level: Extreme)
    - All measures listed under High Risk Level.
    - Reschedule all non-essential outdoor work for days with reduced heat index.
    - Move essential outdoor work activities to coolest part of work shift.

- Establish clear drinking schedule to ensure workers are drinking enough water throughout the day.
- Stop work if control methods are inadequate or unavailable when risk is very high.

VIII. Prevention, Communication, and Emergency Procedures

Procedures help reduce the risk of heat-related illnesses and ensure that emergency assistance is provided without delay.

A. Scheduling - When possible, outdoor work should be scheduled during the cooler times of the day.

B. Monitoring of Weather Conditions - Supervisors and employees need to stay alert to the weather conditions and make sure to monitor the weather at the specific locations where work activities are occurring. Current weather information is to be monitored by Supervision, to allow for appropriate adjustments in work activities.

1. Communication

- Employees working outside must have a means of communication to their supervisor or co-workers. This can include cell phones or radios.
- Co-workers can use a “buddy system” approach to watch for signs or symptoms of heat illness.
- Supervisors must monitor employees during heat stress conditions and will account for the whereabouts of crew members at appropriate intervals throughout the work shift and at the end of the work shift.

2. Emergency Procedures

- Plant 1 Emergencies: Dial 2222 from OCSD landline or 714-593-7133 (P1 Emergency Line) to activate the medical response team (MRT) and for contacting emergency medical services (i.e., local fire department).
- Plant 2 Emergencies: Dial 2222 from OCSD landline or 714-593-7677 (P2 Emergency Line) to activate the medical response team (MRT) and for contacting emergency medical services (i.e., local fire department).
- Pump Station and Other Off-Site Emergencies: Dial 911 for contacting emergency medical services (i.e., local fire department).
- An employee exhibiting signs or symptoms of heat illness will be monitored and will not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services according to OCSD procedures.
- Any incident where heat illness has been experienced must be reported to the Supervisor and Risk Management.

IX. Heat Illness Types and Symptoms

A. Heat Stroke

Heat stroke is the most serious heat-related illness and is treated as a medical emergency. Heat stroke occurs when the body becomes unable to adequately dissipate heat, losing the ability to regulate core body temperature. The core body temperature rises rapidly, the sweating mechanism may fail, and the body is unable to cool down. A heat stroke victim may first suffer heat cramps and/or heat exhaustion before progressing into the heat stroke stage, but this is not always the case. Heat stroke is sometimes mistaken for a heart attack. It is therefore very important to be able to recognize the signs and symptoms of heat stroke and to check for them anytime someone collapses while working in a hot environment.

Symptoms include a high body temperature (106 degrees or higher), hot dry skin which may be red, mottled, or bluish, mental confusion, delirium, loss of consciousness, convulsions, coma, and absence of sweating.

Victims of heat stroke can die unless treated promptly. It is vital to quickly lower a heat stroke victim's body temperature. Move victim to a shaded or cool area, pour water on them, fan them, or apply cold packs. Call for Emergency Medical Services immediately to get the person medical aid as soon as possible and contact your supervisor.

B. Heat Exhaustion

Heat exhaustion is often a precursor to heat stroke. It is accompanied by elevated core body temperatures around 100.4 F – 102.2 F. This condition results from loss of fluid through sweating when a worker fails to drink enough fluids, replace mineral loss, or both. The worker still sweats but experiences extreme weakness and fatigue, intense thirst, dizziness, giddiness, nausea, decreased urine output and/or headache. The skin is clammy and moist, the complexion is pale/flushed, and the body temperature is normal or slightly higher.

Move the affected individual to a cool location such as a shaded area or air-conditioned building. Have them lie down with their feet slightly elevated. Loosen their clothing, apply cool wet cloths, or fan them. Remove as much clothing as possible. Have them drink water or electrolyte drinks. Try to cool them down and have them checked by medical personnel. Victims of heat exhaustion should avoid strenuous activity for at least a day and continue to drink water to replace lost body fluids. Call for Emergency Medical Services immediately if the person becomes non-responsive, refuses water, vomits, or loses consciousness. Contact your supervisor immediately.

C. Heat Cramps

Heat cramps are muscle spasms which usually affect the arms, legs, or stomach. These occur when workers drink enough water but do not replace their body's salt loss. They are usually caused by heavy sweating, especially when water is not replaced quickly enough.

Drink electrolyte solutions such as Gatorade or plenty of water during the day and try eating more fruits such as bananas to help keep the body hydrated. Increase intake of <u>non-diuretic</u> fluids and rest. Common diuretic fluids that should be avoided include caffeine-containing products and alcoholic beverages, etc. A damp towel applied to the head or neck may speed cooling. Call Emergency Medical Services and your supervisor immediately if the person becomes ill.

D. Heat Syncope (Fainting)

Heat syncope, or fainting, can occur if a worker is not acclimatized to heat and if the worker stands still rather than moving around.

Victims usually recover after a brief period of lying down. Moving around, rather than standing still in the heat, will reduce the possibility of fainting. Call for Emergency Medical Services and your supervisor immediately if the person becomes ill.

E. Heat Rash

Heat rash is a skin irritation caused by excessive sweating. Excessive moisture and sweat obstructs sweat ducts and form itchy and painful red pimple/blister clusters and skin lesions. It is exacerbated in hot and humid weather and common on the neck, chest, groin, armpits, elbow creases and behind the knees.

Workers experiencing heat rash should, when possible, move to a cooler, less humid work environment. The rash area shall be kept dry. Do not use ointments or creams.

X. Training

A. All Employees

Training is critical to help employees understand the risk of heat related illnesses and how to prevent or respond to an emergency. The OCSD Heat Illness Prevention online training offered through Cornerstone is required to be completed by all staff on an annual basis. The required training includes but is not limited to:

- Personal and environmental risk factors for heat illness, as well as the added burden of heat load on the body caused by exertion, clothing, and personal protective equipment.
- OC San's responsibility to provide potable water, shade, and cool-down rests.
- The importance of frequency consumption of small quantities of water, up to four cups per hour, when hot and employees are likely to be sweating more than usually in performance of their duties.
- The concept, importance, and methods of acclimatization.
- Type of heat illness, signs, and symptoms, and first aid.
- Importance of immediately reporting sign of heat illness.
- Procedures to respond to signs and symptoms of heat illness.
- Procedures for summoning, or transporting to, off-site emergency medical service, if necessary.
- Procedures or method to provide emergency responders clear and precise directions to OC San work area.
- Employees' right to exercise their rights under Cal/OSHA's Heat Illness standard without retaliation

The training will be documented within Cornerstone along with details on the subject matter covered and date of training recorded. Supervisors must periodically review this information with crews when ambient temperatures are elevated and during heat wave conditions.

Supervisors shall conduct supplemental heat illness training with employees prior to the start of the heat season and periodically thereafter. The training may be conducted as part of a tailgate meeting, where the session is documented. The supplemental heat illness training presentation was developed by Risk Management (Attachment B), and includes how heat is handled by the

body, signs and symptoms of heat illness, reporting, emergency measures, and some prevention tips.

B. Supervisor Training

Personnel in a supervisory role will have training that includes the training for all employees, and knowledge of the following:

- The procedures the supervisor is to follow when an employee exhibits signs or reports symptoms consistent with possible heat illness, including emergency response procedures.
- Where the work area is affected by outdoor temperatures, how to monitor weather reports and how to respond to hot weather advisories.

C. Refresher Training

Employees shall be retrained annually in heat illness prevention. Retraining will also be required under any of the following conditions:

- Changes in the workplace render previous training obsolete.
- Inadequacies in an employee's knowledge of heat illness prevention indicate that the employee has not retained the required training.

XI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OCSD Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XII. Exceptions/Conditions/Provisions

XIII. References

A. Title 8 California Code of Regulations, General Industry Safety Orders, Section 3395 – Heat Illness Prevention

B. Heat Illness Prevention Information

C. Title 8 California Code of Regulations, General Industry Safety Orders, Draft Heat Illness Prevention in Indoor Places of Employment

XIV. Revision History

Version	Date	By	Reason
1.0	11/02/2020	John Frattali	New
2.0	10/04/2021	Brian Huynh	Annual Program Review – Refer to Program Change Log

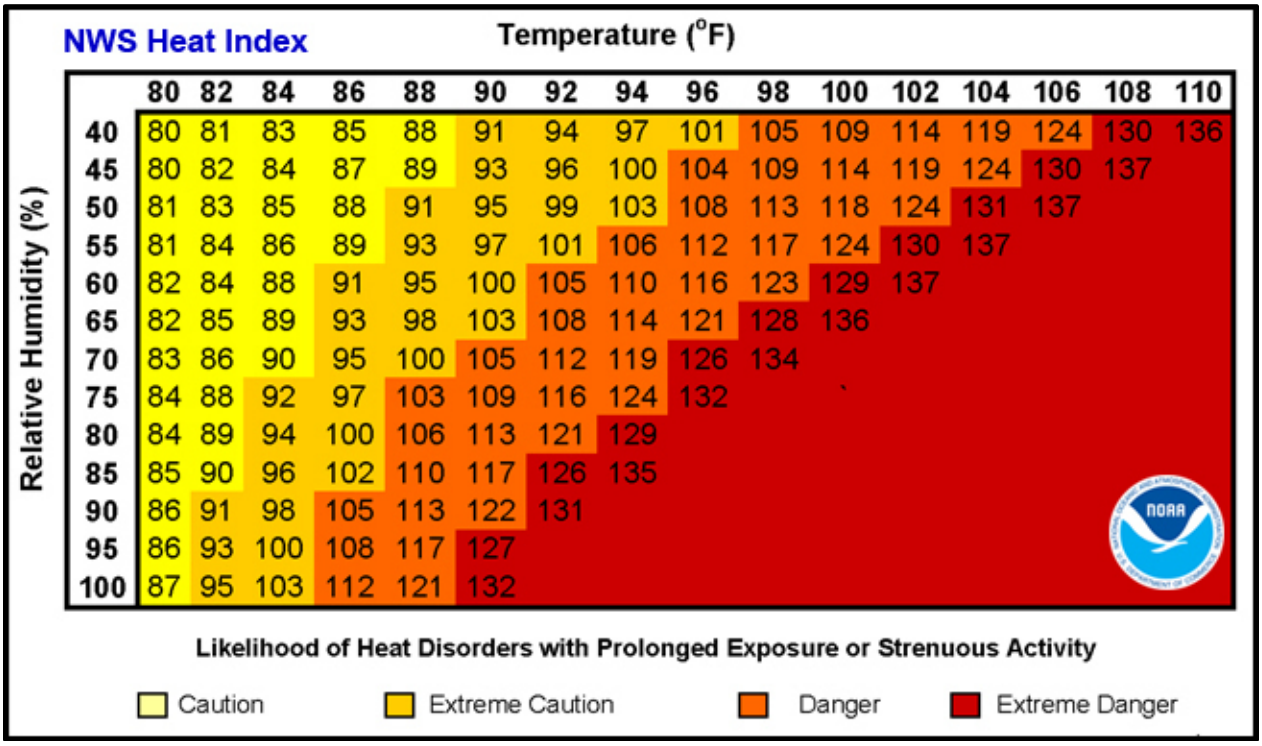
XV. Attachments

A. National Weather Service Heat Index Values
B Supplemental Heat Illness Prevention Training

Attachment A

National Weather Service Heat Index Values

National Weather Service Heat Index Values



Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

Attachment B

Supplemental Heat Illness Prevention Training

Keep Your Cool in Hot Weather

Heat Illness Prevention

CELEBRATING 65 YEARS
ORANGE COUNTY SANITATION DISTRICT

Heat Illness

Heat illness is a general term to include:

- Heat cramps
- Heat rash
- Heat syncope (fainting)
- Heat exhaustion
- Heatstroke

Workers have died or suffered serious health problems from these conditions. Heat illness can be prevented.

Risk Factors Contributing to Heat Illness

Worker

Hydration, clothing, medical conditions, acclimatization

Environment

Air temperature, humidity, sun, conductive heat, air movement

Work

Amount of work done and how much effort to complete

Signs and Symptoms

Watch for the symptoms in yourself and your coworkers. If you feel any symptoms, tell your coworkers and supervisor immediately because you may need medical help.

Early Symptoms

- Fatigue
- Heavy sweating
- Headache
- Cramps
- Dizziness
- High pulse rate
- Nausea / vomiting
- *Urine color

Signs and Symptoms

Urine Chart

well hydrated

Your urine is an ideal, pale straw colour. Keep up the good work.

You're okay but you could do with a small glass of water now.

You may be a little dehydrated. Drink a couple of glasses of water now.

You need to drink about up to half litre of water right now.

Not good! You are dehydrated and may have a headache. Drink a litre of water.

poorly hydrated

Note: if your urine is even darker than this and or red/dark brown then dehydration may not be the problem. Seek medical advice.

Signs and Symptoms

Life-threatening Symptoms

- High body temperature
- Red, hot, dry skin
- Confusion
- Convulsions
- Fainting

GET MEDICAL HELP

Heat Rash

Symptoms

- Clusters of red bumps on skin
- Often appears on neck, upper chest, folds of skin

First Aid Measures

- Try to work in a cooler, less humid environment when possible.
- Keep the affected area dry.

Heat Cramps

Symptoms

- Muscle spasms
- Pain, usually in the abdomen, arms, or legs

First Aid Measures

- Have worker rest in shady, cool area.
- Worker should drink water or other cool beverage.
- Wait a few hours before allowing worker to return to strenuous work.
- Seek medical attention if cramps don’t subside.

Heat Exhaustion

Symptoms

- Cool, moist skin with goose bumps when in heat
- Heavy sweating
- Nausea or vomiting
- Dizziness, faintness, headaches
- Weak, rapid pulse

First Aid Measures

- Have worker sit or lie down in a cool, shady area.
- Give plenty of water and cool with cold compresses/ice packs.
- Take to clinic or emergency room for medical evaluation if symptoms do not improve within 60 minutes.

Heatstroke

Symptoms

- Red, hot and dry skin
- Dizziness and light-headedness, fainting
- Rapid, shallow breathing
- Slurred speech, seizures
- Temperature above 104°F

First Aid Measures:

- Immediately contact for Emergency Medical Services (911) using OCSD notification procedure (x2222).
- Place worker in a cool, shady area and loosen clothing.
- Pack employee with ice and cooling blankets, fan air.
- Give plenty of water and wet worker.

Emergency Response

- Notify coworkers and supervisor upon signs and symptoms.
- Monitor employee and activate Medical Response Team.
  - Dial 2222 from OCSD Landline, or
  - Contact Control Center via radio, or
  - Call 714.593.7133 (P1) or 714.593.7677 (P2)
- Heatstroke is a medical emergency, contact Emergency Medical Services (911) immediately following OCSD procedure. Do not leave employee alone.
- Heat exhaustion and heat cramps, determine if clinic or emergency room is required. Do not leave employee alone or allow to leave work for day without being monitored.

Prevention Tips

Drink at least 1 quart (32 ounces) of water per hour. This is equivalent to two standard Sparkletts® water bottles.

- Water is the bodies single best defense against heat.
- The body can lose up to 1 quart of water per hour just by sweating.
- Self-dispensing water coolers available in all occupied buildings and control rooms.
- Water bottles available from Warehouse. Water must be suitably cool.
- Drink if you aren't thirsty. Being thirsty is early signs of heat illness.

Prevention Tips

- Take a preventative cool-down rest in the shade for at least 5 minutes.
  - Shade is buildings, canopies, or other partial or temporary structures that are ventilated or open to air movement.
  - Shade is required when temperatures exceed 80F.
  - Do not wait until you feel sick to cool down.
  - Rests should occur at least every 2 hours or more frequently if needed. Rests may include regularly scheduled breaks.

Prevention Tips

- Employees experiencing symptoms of heat illness must be monitored, and employee may not return back to work until signs or symptoms have abated.
- Emergency medical personnel must be contacted if heat illness is suspected. No employee with signs or symptoms should be left unattended or sent home without being offered onsite first aid or emergency services.

Prevention Tips

- Allow body to acclimate during heat waves and onset of summer. The body needs time to adapt to the hotter environment.

- Weather tracking and routine checking for heat waves through local weather forecasts provided by the OCSD-contracted Meteorologist.

- Choose water over soft drinks and coffee. Eat cool, light, nutritious meals. Limit salt intake.

Heat Illness

Be alert to the signs and symptoms of heat illness. Even the early stages should be taken seriously.

ORANGE COUNTY SANITATION DISTRICT	SOP-642 (Ver. 2) Industrial Hygiene Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

This Industrial Hygiene Program (the Program) is applicable to Orange County Sanitation District (OC San) facilities and other locations where OC San employees are performing work. This Program sets forth the Industrial Hygiene Program requirements for OC San. It covers plans and responsibilities, including control of hazardous agents, qualitative and quantitative exposure assessment, and employee notification.

The purpose of the Program and ensuing activities is to anticipate, identify, evaluate, and provide exposure reduction controls for potentially hazardous agents present or arising from activities in the workplace. Exposure controls are aimed at maintaining worker exposures to hazardous agents below occupational exposure limits (OEL).

The Industrial Hygiene Program is designed to comply with Cal/OSHA §5155 *Airborne Contaminants*.

II. Definitions

Action Level: The level of concentration of a harmful or toxic substance or contaminant that when exceeded is considered sufficient to warrant regulatory action.

Ceiling Limit: The maximum concentration of an airborne contaminant to which an employee may be exposed at any time.

Employee Exposure: An exposure that occurs in the employee's immediate work environment to chemical, physical, or biological agents irrespective that personal protective equipment is being used.

Excursion Limit: Used by the ACGIH for a substance that does not have an assigned short-term exposure limit. Excursion in worker exposure levels may exceed 3 times the TLV-TWA limit for no more than a total of 30 minutes during a workday, and under no circumstances should they exceed 5 times the TLV-TWA limit, provided the 8-hour TLV-TWA is not exceeded.

Exposure Assessment: The qualitative or quantitative evaluation made by an experienced industrial hygienist to determine the degree of personal exposure that may occur while employees perform their job tasks.

Hazardous Agent: Any element, chemical compound, or mixture of elements and/or compounds that has potential to cause adverse health effects or injury. This includes ergonomics, chemical, physical, and biological hazards.

Occupational Exposure Limits (OEL): Generic term to represent several specific air concentration limits of contaminants assigned by regulatory and occupational health groups, such as the permissible exposure limit (PEL) threshold limit values (TLV®), or workplace environmental exposure limits (WEEL®).

Permissible Exposure Limit (PEL): Occupational Safety and Health Administration (OSHA) term for the maximum permitted 8-hour time-weighted average (TWA) concentration of an airborne contaminant as specified in Table AC-1 of §5155 *Airborne Contaminants*.

Threshold Limit Value (TLV®): American Conference for Governmental Industrial Hygienist (ACGIH®) term for airborne concentration of a substance below which all workers are believed to be protected while exposed to it day after day for 8-hour periods.

Safety Data Sheet (SDS): Document that lists information relating to occupational safety and health for the use of various substances and products. OSHA specifies a required SDS format for products used in the USA.

Similar Exposure Group (SEG): A group of workers having the same general exposure profile for the agents being studied because of similarity and frequency of the tasks they perform, the materials and processes with which they work, and the similarity of the way they perform the tasks.

Short-Term Exposure Limit (STEL): An employee exposure to an airborne contaminant, expressed as a 15-minute time-weighted average (TWA) concentration, shall not exceed the STEL specified for the substance in Table AC-1 at any time during the workday. If another averaging period is indicated in the footnotes to Table AC-1, the TWA exposure over that period shall not exceed the specified STEL at any time during the workday.

Time-Weighted Average (TWA): the average exposure to a contaminant or condition to which workers may be exposed without adverse effect over a period of 8 hours a day or 40 hours a work week. The magnitude of each exposure period is weighted against the respective duration of exposure throughout each 8-hour shift.

Workplace Environmental Exposure Limit (WEEL®): Recommended exposure limit set by the American Industrial Hygiene Association (AIHA®).

III. Responsibilities

A. Risk Management is responsible for:

1. Implementation and management of the Industrial Hygiene Program.

2. Communication with management regarding the implementation of this program.

3. Assisting management in identifying, evaluating, and monitoring actual or potential exposures to ergonomic, chemical, physical, and biological hazards.

4. Assisting management in determining the need for and recommending engineering or administrative controls to eliminate or reduce the exposure potential.

5. Alerting employees of their air monitoring results via an employee notification letter.

B. Management (includes all levels of supervision) is responsible for:

1. Informing Risk Management of any proposed process changes, the proposed use of new hazardous materials, or a proposed new use for new means of exposure to an existing hazardous material.

2. Informing Risk Management of any questions or concerns expressed by employees regarding their potential exposures.

3. Coordinating with Risk Management for the qualitative evaluation and possible quantitative exposure monitoring of potential hazards.

4. Implementing identified engineering or administrative controls to eliminate or reduce potential exposures.

C. Employees are responsible for:

1. Following all rules and instructions designed to minimize or eliminate exposure to potential hazards.

2. Participation in qualitative industrial hygiene analysis meetings.

3. Cooperating in industrial hygiene monitoring activities when required.

4. Informing supervision and Risk Management of any questions, concerns, or observations they have regarding potential exposures to hazardous agents.

IV. Scope

A. It is OC San's intention to protect employees from potentially hazardous agents through:

1. Identification of potential hazards.

2. Evaluation and monitoring of potential hazards on a periodic basis.

3. Control of identified hazards.

4. Review of new chemicals and processes that could pose new or increased hazards to employees.

5. Review and evaluation of questions, concerns, or complaints raised by employees, supervisors, or bargaining unit representatives regarding known, previously unrecognized, or suspected hazards.

6. Medical monitoring for specific exposures or conditions when required by regulation or good practice.

7. Notification to employees regarding the results of exposure and medical monitoring.

8. Training of employees to ensure they receive the most current information on how to protect themselves from potential exposures.

B. This Program provides an overview of general practices intended to protect employees from potentially hazardous agents. Additional procedures address specific elements of the Program including but not limited to:

1. Injury and Illness Prevention Program
2. SOP-607 Hazard Communication
3. SOP-102 Personal Protective Equipment
4. SOP-106 Hearing Conservation Program
5. SOP-109 Respiratory Protection Program
6. SOP-110 Radiation Safety Program
7. SOP-113 Bloodborne Pathogen
8. SOP-121 Asbestos
9. SOP-122 Lead
10. SOP-203 Ergonomics
11. SOP-207 Hexavalent Chromium
12. SOP-111 Medical Program

V. Procedure

A. Qualitative Exposure Assessment

1. The purpose of a qualitative exposure assessment is to develop a comprehensive evaluation of the workplace and to characterize the potential exposures of each employee. Employees are categorized into groups of anticipated similar exposures (i.e., similar exposure groups), such that estimating and monitoring exposures of any worker in the group provides data useful for predicting the exposures of the remaining workers.

2. Representatives from each of these groups participates in the qualitative exposure assessment. The assessments are facilitated by a qualified industrial hygienist and shall consider the following:
    a. Hazardous agents
    b. Job categories
    c. Approximate frequency and duration of potential exposure
    d. Routes of entry
    e. Number of workers exposed
    f. Characterization of hazard (potential severity)
    g. Characterization of exposure (frequency and duration of potential exposure)
    h. Control methods used

i. Control effectiveness (via observations, interviews, visual analysis)

3. The identification of hazardous agents and qualitative evaluation of exposure is done in small group meetings consisting of employees knowledgeable in tasks being evaluated. At least one individual familiar with performing qualitative exposure assessments participates to lead and record the results of the identification and evaluation sessions. Results of the meetings are maintained in tabular form and written summary, which are used by the qualified industrial hygienist to determine control effectiveness and the need for further control development or necessity to perform quantitative analysis, such as air monitoring or noise dosimetry. Review of a product's safety data sheet (SDS) may be useful if the product has a significant use and is a mixture of ingredients.

B. Quantitative Exposure Assessment

1. The purpose of the quantitative exposure assessment is to determine measured levels of hazardous agents in the workplace by conducting personal and/or area monitoring of job tasks/operations receiving an elevated risk rating in the qualitative exposure assessment.

2. Quantitative exposure assessments shall be conducted by individuals knowledgeable in the use of approved sampling and monitoring techniques, using accredited laboratories, and capable of interpreting the results. Accepted and validated National Institute of Occupational Safety and Health (NIOSH) and/or Occupational Safety and Health Administration (OSHA) mentioned, or equivalent as determined by the industrial hygienist shall be used to evaluate employee exposures. Laboratories shall be accredited by the American Industrial Hygiene Association (AIHA) and National Voluntary Laboratory Accreditation Program (NVLAP).

3. A monitoring plan shall be developed and designed to reflect data that accurately estimates the exposure of SEGs while working under normal conditions. The plan shall identify the agents, job tasks and/or areas that will be sampled, the number of samples and frequency of monitoring, and the type of sample (i.e., personal or area, full-shift, STEL, or ceiling).

4. Sample quantities will be based on one or a combination of the following:

   a. Representative or worse case – typically one or two targeted samples are recommended when low exposure conditions are well understood and can be reasonably predicted. In this case, one or two samples well-below the PEL confirms qualitative characterization of the low exposure.

   b. Statistical – Three or more samples may be needed when exposure conditions appear to vary, or initial sample results approach the OEL or vary significantly.

   c. Regulatory – OSHA may specify a sample frequency while exposures are above the AL or PEL for certain carcinogenic or teratogenic substances.

C. Control Measures

1. The most appropriate control measure(s) shall be implemented to reduce employee exposures below the OEL. Implementation of control measures will follow the hierarchy of controls:

a. Elimination or Substitution: physically remove the hazard or replace with a less hazardous material

b. Engineering Controls: design and use of workstation controls through physical means or modification to isolate employees from the hazard, such as ventilation, enclosure, barriers, automation, etc.

c. Administration Controls: design and use of procedures to change the way employees work, such as training, procedures, policies, and shift modifications.

d. Personal Protective Equipment: selection and use of approved protective equipment to reduce and control exposures, such as gloves, coveralls, respirators, etc.

2. The most feasible, effective, and permanent control shall be selected. Elimination should be considered for all hazards that are likely to cause death or serious physical harm. If elimination or substitution is not possible, engineering solutions should be selected first, followed by safe work practices, administrative controls, and finally personal protective equipment. Controls that directly or indirectly introduce new hazards shall be avoided. A combination of controls shall be used when no single method fully protects employees.

D. Review of New Chemicals and Processes

1. No product containing hazardous substances shall be purchased without notification and prior approval by Risk Management in accordance with the Hazard Communication Program (ADM-SOP-607), which includes provisions for the review of new chemicals.

2. When a new chemical or process hazards are identified, they shall be evaluated qualitatively for all similar exposure groups that may be affected. Subsequent analysis by an industrial hygienist or other qualified health and safety professional will determine adequacy of controls.

E. Review and Evaluation of Questions or Concerns

1. All questions, concerns or complaints raised by employees, supervisors, or bargaining unit representatives regarding known, previously unknown, or suspected hazards shall be thoroughly reviewed and evaluated.

2. This evaluation shall be performed as soon as possible unless it is determined that it can be done during the annual review of the qualitative exposure assessments.

VI. Medical Monitoring

When exposure monitoring indicates that an Action Level established by a specific regulation has been met or exceeded, medical monitoring shall be conducted in accordance with the applicable regulation. Individuals involved in medical monitoring shall incur no cost for the service and shall have ready access to their personal records created as a result of medical monitoring. Quantitative exposure assessments for personal exposures shall be maintained for the term of employment +30 years, or as stipulated in CAL/OSHA regulations. Employees will also be referred for medical monitoring if they (1) report or sustain an acute hazardous agent exposure during a spill or uncontrolled release or (2) report medical symptoms potentially correlated to hazardous agent(s) in their work area.

VII. Reporting Results

Results of exposure and medical monitoring shall be reported to affected employees, either by posting in a location accessible to all affected employees or through individual written notification, or both, in accordance with applicable regulations and privacy rules. Safety meetings may also be used to inform employees of qualitative or quantitative industrial hygiene evaluation results. Employees shall be provided notice regarding their right to access exposure and medical monitoring records on a regular basis, at least annually.

VIII. Noise and Audiometric Testing

The Hearing Conservation Program (Safety SOP-106) provides the framework of controlling noise exposures and monitoring an individual's hearing threshold levels.

IX. Ergonomic Concerns

The Ergonomics Program (Safety SOP-203) provides the framework of ergonomic evaluation and remedies.

X. Training

Employees shall receive required training in accordance with the procedures listed in 5.2 including the Safety and Health Training Program (Safety SOP-405).

XI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XII. References

Injury and Illness Prevention Program

SOP-102, Personal Protective Equipment

SOP-109, Respiratory Protection Program

Title 8, California Code of Regulations, Subchapter 7, Group 16, Article 107, Section 155 Airborne Contaminants

XIII. Revision History

Version	Date	By	Reason
1	07/23/2020	John Frattali	Initial
2	10/25/2021	Sheri Ventanilla	Periodic Update – Refer to Program Review Findings change log

ORANGE COUNTY SANITATION DISTRICT	SOP-643 (Ver. 2) Personal Hygiene
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The Orange County Sanitation District (OCSD) is committed to providing a safe and healthy work environment for employees. Personal hygiene is a critical element in the success of OCSD's overall safety program.

The goal of this program is to promote good hygiene practices to prevent the transmission of diseases from source to susceptible hosts. Employees who practice good personal hygiene can prevent the spread of germs and disease.

The OCSD has developed the Personal Hygiene program in accordance with California Occupational Safety and Health Administration (CALOSHA) general safety orders, Article 9 *Sanitation* and Article 10 *Personal Safety Devices and Safeguards*.

II. Applicability

This program applies to OCSD employees and Contractors working in occupied buildings and all work areas within the treatment plants, pump stations, collections system and supporting facilities. In certain circumstances, such as a pandemic, more restrictive personal hygiene rules may apply under separate policy.

III. Definitions

Antimicrobial Soap – Soap containing an antiseptic agent at a concentration sufficient to inactivate microorganisms and/or temporarily suppress their growth. The detergent activity of such soaps may also dislodge transient microorganisms or other contaminants from the skin to facilitate their subsequent removal by water.

Bacteria – Any group of microscopic single-celled organisms that live in enormous numbers in almost every environment on the surface of Earth.

Cleaning – removal of visible soil (e.g., organic, and inorganic material) from objects and surfaces and normally is accomplished manually or mechanically using water with detergents or enzymatic products. Thorough cleaning is required before disinfection because materials that remain on the surface interfere with effectiveness of the processes.

Detergent – Compounds that possess a cleaning action. They are composed of hydrophilic and a lipophilic part and can be divided into four groups: anionic, cationic, amphoteric, and non-ionic. Although products used for handwashing or antiseptic handwash in health care represent various types of detergents, the term "soap" will be used to refer to such detergents in these guidelines.

Disinfection – Process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects. Objects are disinfected by liquid chemicals.

Helminth – a parasitic work: a flue, tapeworm, or nematode.

Microorganism – an organism too small to be viewed by the unaided eye, as bacteria, protozoa, and some fungi and algae.

Pathogens – A disease-producing agent, especially a virus, bacterium, or other microorganism.

Protozoan – A diverse group of eukaryotes, of the kingdom Protista, that are primarily unicellular, existing singly or aggregating into colonies, are usually non-photosynthetic, and are often classified further into phyla according to their capacity for and means of motility, as by pseudopods, flagella, or cilia.

Virus – Small infectious agent that can replicate only inside the living cells of an organism.

IV. Roles and Responsibility

A. Risk Management

1. Prepare and maintain a written program which complies with the requirements of applicable CALOSHA standards.
2. Assist with providing training materials and training potentially impacted employees and their supervisors on causative agents, modes of transmission and prevention and sanitary control measures.

B. Supervision

1. Promote good hygiene practices with staff.
2. Monitor the compliance of their staff in adherence to this program.
3. Responsible for the effective use of this procedure in the work group and to see that all required procedures are followed in every instance.

C. Employees

4. Carry out good personal hygiene as per this program.
5. Report near misses and illnesses to supervisor and Risk Management.

V. Microbial Pathogens

A. Occupied Buildings

1. Most illnesses, including colds and flu, are transmitted through the air.
2. When someone sneezes or coughs, water or mucous droplets filled with viruses or bacteria scatter in the air or end up in the hands where they spread on surfaces.
3. Many airborne diseases are common and can have mild or severe symptoms.

B. Treatment Plants, Pump Stations, Collections System and Supporting Facilities

1. There are a wide range of microbial pathogens that can be present in wastewater, with the type and number present being highly variable.
2. Airborne concentrations are typically highest wherever sewage is agitated.
3. Surfaces associated with plant equipment (e.g., pumps, motors, piping, valves) and structures (e.g., floors, walls, guardrails) should be considered contaminated. Excluded are electrical rooms, battery rooms, control rooms and break rooms within the treatment plants and pump stations.

4. Majority of the pathogens are enteric in origin, which means they are excreted in fecal matter, contaminate the environment, and then gain access to new hosts through ingestion (i.e., fecal-oral route).
5. Exposure may potentially result in disease, or in a carrier state where an infection does not clinically manifest itself in the individual but can be spread to others.
6. Microbial pathogens present in wastewater are divided into three groups: viruses, bacteria, and pathogenic protozoan/helminths. Potential pathogens for each group are provided in the Table below. Bacteria is the most common microbial pathogen found in wastewater.

Table. Potential Microbial Types in Wastewater

Microbial Type	Major Disease(s)
Virus	
Enterovirus	Gastroenteritis, heart anomalies, meningitis
Echovirus	
Coxsackievirus	
Hepatitis A virus	Hepatitis
Adenovirus	Respiratory disease, conjunctivitis
Norwalk virus	Gastroenteritis, diarrhea, vomiting, fever
Rotavirus	Gastroenteritis
Astrovirus	
Coronavirus	Fever, respiratory illness, pneumonia, death
Bacteria	
Vibrio cholerae	Cholera
Salmonella typhi	Typhoid, Salmonellosis
Enteropathogenic E. coli	Gastroenteritis
Campylobacter jejunei	
Shigella dysinterae	Dysentery
Protozoa / Helminths	
Giardia intestinalis	Giardiasis
Cryptosporidium parvum	Diarrhea, fever
Entamoeba histolytica	Amoebic dysentery
Ascaris lumbricoides	Ascariasis
Ancylostoma spp.	
Trichuris trichiura	Trichuriasis

VI. Modes of Transmission

A. Direct Contact

1. Droplet spread occurs when coughing, sneezing, or speaking with another person when in proximity.
2. Person-to-person contact spread occurs when an infected person touches or exchanges body fluids with someone else.

B. Indirect Contact

1. Eating or drinking contaminated or poorly prepared food and drinks.
2. Handling or touching contaminated surfaces and then rubbing or touching your nose, eyes, or mouth.

3. Handling or touching contaminated surfaces and then eating, drinking, smoking, or applying cosmetics.
4. Exposure via airborne transmission or contact with open cuts and wounds.

VII. Control Measures

A. General

1. Wash hands with soap and water for 20 seconds before eating, drinking, smoking, or applying cosmetics.
2. Wash hands with soap and water for 20 seconds before and after using the restroom.
3. To avoid transfer of pathogens from hands into the body, do not touch eyes, mouth, and nose.
4. Use a tissue, or cough and sneeze into your arm, not your hand. Turn away from other people.
5. Use single-use tissues where possible and dispose of the tissue immediately, then wash your hands.
6. Avoid sharing cups, glasses, dishes, cutlery or food and drinks with others. Wash all dishes with soap and water after use or use disposable utensils and discard them afterward.
7. Avoid chewing or sucking on pens and pencils, as these items are commonly shared.
8. Keep fingernails short and avoid biting nails.
9. Avoid going to work if you have signs and symptoms (e.g., vomiting, diarrhea, cough, runny nose, fever, etc.) of an infection.
10. Avoid other sick people.
11. Clean workstations (e.g., keyboard, mouse, phones) and other commonly touched objects (e.g., doorknobs, printers, sink faucets) with disinfecting wipes.
12. Discard single use cups after first use.
13. If refilling reusable cups, avoid direct contact with the cup and the water dispenser spigot.
14. Cover open sores, cuts, and wounds with clean, dry bandages.
15. Toilet facilities shall be kept clean, maintained in good working order and be always accessible to employees.
16. Break areas shall be kept clean, orderly and in a sanitary condition.

B. Treatment Plant, Pump Stations and Collection System

1. Wash hands thoroughly with soap and water or after direct contact with sewage. If soap and water are not available, use an antiseptic hand rub (hand sanitizer foam or gel).
2. If you get sprayed or splashed with sewage or sewage residues, disrobe, take a shower, and change your uniform.
3. To avoid direct contact with wastewater, always wear impervious gloves and protective clothing, including safety eyewear.

4. Remove work clothing in a manner that would minimize further contamination to yourself or areas around you.
5. . If a uniform becomes contaminated with chemicals, wastewater, or wastewater byproducts (i.e., sludge, effluent, etc.), the uniform must be cleaned by the professional uniform service. If it is reasonable to suspect that a uniform has not been contaminated, employees may also take uniforms home for washing. Any uniforms washed at home must be washed separately from other clothes. Arc flash rated uniforms must always be washed by the professional uniform service.
6. Decontaminate boots at boot wash areas prior to entering vehicles or occupied buildings.
7. Showers are recommended at the end of shift. Wear shower sandals when in shower. Do not share bar soap, towels, or razors. Shower facilities shall be maintained in good working order and sanitary.
8. Disinfect radios, cell phones, and reusable PPE frequently.
9. Do not drink or wash hands and face with plant water or reclaimed water available from taps in plant process areas. Bottled water is provided for these purposes.
10. Consume food in approved break and lunch areas.
11. Consume liquids only in approved break and lunch areas, control rooms, electric carts, and vehicles. Liquid containers in electric carts shall have a closeable lid and be secured to prevent displacement.
12. Avoid chewing tobacco or gum.
13. Do not place hard hats, gloves, or footwear on eating surfaces.
14. Do not store food in refrigerators or cabinets intended for chemicals or samples.

VIII. Eating and Drinking in the Workplace and Process Areas

A. Eating and drinking is acceptable in all areas where PPE is not required including:

1. Lunchrooms
2. Maintenance and administrative work areas
3. Controls rooms at Plant 1, Plant 2, and Pump stations
4. In carts and vehicles
5. Contractor laydown areas

B. Please refer to the P1 and P1 Non-PPE Locations map in the Maps Library on MyOCSD.

IX. Hand Washing Technique

A. Wet hands with warm running water.

B. Apply soap to hands.

C. Vigorously rub hands together for at least 20 seconds, covering all surfaces of hands and fingers.

D. Rinse hands thoroughly with warm water and with hands angled down in the sink.

E. Dry hands thoroughly with a disposable towel(s).

F. Use disposable towel to turn off the water.

G. Discard disposable towel in trash receptacle.

X. Potable Water System

A. Although the piped potable water at OCSD meets all water quality standards, OCSD does not recommend it for human consumption based on an abundance of caution.

B. The ongoing construction, maintenance, and renovation taking place at OCSD makes our potable water system susceptible to a cross-connection or backflow event.

C. A backflow occurs when drinking water piping is inadvertently damaged or connected to equipment or processes. If improperly protected, contamination can result when contaminates flow from the equipment/process back into the drinking water piping.

D. Minimizing and preventing possibility of backflow events at OCSD:

1. Annual testing of existing backflow prevention devices
2. Regular inspection of new backflow prevention devices
3. Monthly laboratory testing of potential contaminants in the potable water system

E. Potable water should not be used for drinking, coffee making, food rinsing, brushing teeth or ice making (consumption). Bottled water is provided for these purposes.

XI. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OCSD Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XII. References

Title 8, California Code of Regulations (CCR), Subchapter 7, Group 2, Article 9, Section 3362, General Requirements

Title 8, CCR, Subchapter 7, Group 2, Article 9, Section 3363, Water Supply

Title 8, CCR, Subchapter 7, Group 2, Article 9, Section 3364, Sanitary Facilities

Title 8, CCR, Subchapter 7, Group 2, Article 9, Section 3366, Washing Facilities

Title 8, CCR, Subchapter 7, Group 2, Article 9, Section 3367, Change Rooms

Title 8, CCR, Subchapter 7, Group 2, Article 9, Section 3368, Consumption of Food and Beverages

Title 8, CCR, Subchapter 7, Group 2, Article 10, Section 3387, Sanitation

XIII. Revision History

Version	Date	By	Reason
1.0	08/25/2020	Hachim, Sabrina	New
2.0	12/13/2021	Spencer, Case	Periodic Update – Refer to Program

	Orange County Sanitation District **Risk Management**	**Control Number:**	**SOP-644**
		Version Number:	**2.0**
		Approved By: **James D. Herberg** **General Manager**	
		Supersedes:	**07/02/2020**
Subject:	**COVID-19 Pandemic Response Program**	**Effective Date:**	**12/30/2020**

I. Purpose

A. The Orange County Sanitation District (Sanitation District) is committed to providing a safe and healthy workplace for all our workers, contractors, and visitors. To ensure that, we have developed the following COVID-19 Pandemic Response Program in response to the COVID-19 pandemic. All Sanitation District employees, contractors, and visitors are responsible for implementing and abiding by the requirements of this policy.

B. Our goal is to mitigate the potential for transmission of COVID-19 in our workplaces and communities, and that requires full cooperation among our employees, contractors, and visitors. Only through this cooperative effort can we establish and maintain the safety and health of our workplaces.

II. Background

A. Our workers are our most important assets. We are serious about safety and health and keeping our employees working at the Sanitation District. This policy follows guidance provided by the Centers for Disease Control and Prevention (CDC), California Department of Public Health (CDPH), Orange County Health Care Agency (OCHCA), and the California Occupational Safety and Health Administration (Cal/OSHA) regulation for COVID-19 Prevention (Title 8, California Code of Regulations (CCR), Section 3205).

B. The Sanitation District will continue to monitor federal, state, and local guidelines for changes in recommendations, cleaning strategies, and other best management practices such as worker hygiene, physical distancing, and employee wellness. The most recent guidelines will be implemented.

C. The following key prevention practices are addressed:

- Physical distancing,
- Use of face coverings (where respiratory protection is not required),
- Personal hygiene practices such as frequent hand cleaning and respiratory etiquette,
- Regular cleaning and disinfection of individual and communal work areas,
- Prompt identification and isolation of sick persons,
- Temperature and symptom screening,

- Testing,
- Hazard identification and evaluation,
- Communications and training.

III. Definitions

COVID-19 – a coronavirus disease, an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

COVID-19 Case – a person who:

1. Has a positive COVID-19 test.
2. Is subject to a COVID-19-related order to isolate issued by a local or state health official.
3. Has died due to COVID-19, in the determination of a local health department or per inclusion in the COVID-19 statistics of a county.

A person is no longer a "COVID-19 case" in this section when a licensed health care professional determines that the person does not have COVID-19, in accordance with recommendations made by the CDPH or OCHCA pursuant to authority granted under the Health and Safety Code or Title 17, CCR to CDPH or the local health department.

COVID-19 Exposure – means being within six feet of a COVID-19 case for a cumulative total of 15 minutes or greater in any 24-hour period within or overlapping with the high-risk exposure period. This definition applies regardless of the use of face coverings.

COVID-19 Hazard – exposure to potentially infectious material that may contain SARS-COV-2, the virus that causes COVID-19.

COVID-19 Symptoms – means a fever of 100.4 degrees Fahrenheit or higher, chills, cough, shortness of breath or difficulty breathing, fatigue, muscle aches or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, or diarrhea, unless a licensed health care professional determines that the person's symptoms were caused by a known condition other than COVID-19.

COVID-19 Test – a viral test for SARS-COV-2 that is:

1. Approved by the United States Food and Drug Administration (FDA) or has an Emergency User Authorization (EUA) from the FDA to diagnose current infection with the SARS-COV-2 virus.
2. Administered in accordance with the FDA approval or the FDA EUA as applicable.

Exposed Workplace – means any work location, working area, or common area at work used or accessed by a COVID-19 case during the high-risk period, including bathrooms, walkways, hallways, aisles, break or eating areas, and waiting spaces. The exposed workplace does not include buildings or facilities not entered by a COVID-19 case. The exposed workplace only includes the areas of the building where the COVID-19 cases were present during the high-risk exposure period. Effective January 1, 2021, the exposed workplace will include worksite.

Face Covering – a tightly woven fabric or non-woven material with no visible holes or openings, which covers the nose and mouth.

High-Risk Exposure Period – means the following time period:

1. For persons who develop symptoms, from two days before they first develop symptoms until ten days after symptoms first appeared, and 24 hours have passed with no fever, without the use of fever-reducing medications, and symptoms have improved.
2. For persons who test positive who never develop symptoms, from two days before until ten days after the specimen for their first positive test for COVID-19 was collected.

Minor Outbreak – three or more COVID-19 cases in an exposed workplace within a fourteen-day period. Outbreaks do not apply to a person or persons working from home.

Major Outbreak – twenty or more COVID-19 cases in an exposed workplace within a thirty-day period. Outbreaks do not apply to a person or persons working from home.

Potentially Infectious Material – Includes airborne droplets, small particle aerosols, and airborne droplet nuclei, which is most commonly result from a person or persons exhaling, talking, vocalizing, coughing, sneezing, or procedures performed on persons which may aerosolize saliva or respiratory tract fluids, among other things. This includes objects or surfaces that may be contaminated with SARS-COV-2.

IV. Workplace Hazard Assessment and Controls

A. At the onset of the pandemic, the Sanitation District performed a detailed review of workspaces and office configurations to identify transmission risks. Each condition that may contribute to a plausible, potential exposure has been mitigated to the extent feasible using the hierarchy of controls. COVID-19 hazards have been documented in the Workplace Risk Assessment provided as Attachment A.

B. The Sanitation District will continue to identify and evaluate workplace COVID-19 hazards. Employees can report, without fear of reprisal, possible COVID-19 hazards at the workplace using the following mechanisms:

   1. Notify supervision or Risk Management verbally or in writing.

   2. Notify the Safety and Health Committee.

   3. Notify the Emergency Operations Center (EOC) and/or Pandemic Response Team.

   4. Submit a Cority Safety Help Desk Request.

   5. Complete or participate in quarterly workplace or office inspections. The goal of the workplace inspections is to evaluate existing controls and identify the need for different or additional controls.

C. The Sanitation District will evaluate the need for personal protective equipment (PPE) to prevent exposure to COVID-19 hazards, such as gloves, goggles, and face shields, and provide such PPE when needed.

D. Management will monitor, assess, and implement the COVID-19 transmission risk mitigation strategies as identified in Attachment B to address COVID-19 hazards.

V. Respiratory Etiquette

A. Respiratory etiquette is a series of actions to take if you are coughing or sneezing, which are designed to reduce the spread of respiratory illness to others. Out of respect and consideration of others, employees who are repeatedly coughing or sneezing because of an illness are expected to remain at home. In situations, such as allergies where an employee is not sick but can reasonably be expected to cough or sneeze, the employee is expected to carry and use disposable tissues as needed.

B. Employees, contractors, and members of the public must cough, sneeze, or blow their nose into a disposable tissue, and discard the tissue immediately into a trash receptable. If tissues are not available, cough or sneeze into your upper arm or sleeve; avoid using your hands and touching of the face. Employees are encouraged to carry tissues in the event they are needed for controlling aerosols when coughing or sneezing. Disposable tissues are preferred over cloth handkerchiefs, as a handkerchief can act as a breeding ground for germs.

C. Employees must wash or sanitize their hands immediately after coughing, sneezing, or blowing their nose.

VI. Physical Distancing, Face Coverings and Signage

A. General

1. The CDC recommends social (physical) distancing to reduce the spread of the virus that causes COVID-19. The virus spreads primarily when people come into close contact (about six feet) of each other for a cumulative total of 15 minutes or greater in any 24-hour period.

2. The infection can be spread when an infected person coughs, sneezes, or talks, and respiratory droplets from their mouth or nose are launched into the air and land in the mouths or noses of people nearby. The droplets can also be inhaled into the lungs.

3. Studies indicate that people who are infected but do not have symptoms likely also play a role in the spread of the virus that causes COVID-19. The Sanitation District therefore requires social distancing for the protection of all employees, their families, and the public we serve.

B. Reduction of In-Person Employee Headcount at Any Given Time

1. To reduce the spread of the virus that causes COVID-19, the General Manager (or Designee), may require remote work, as appropriate, for any given employee or class of employees.

2. Employees may be required, for example, to work remotely one day and report to the workplace the next. The General Manager (or Designee) may further implement flexible, or staggered work hours, including staggered breaks, as needed.

C. Physical Distancing

1. Employees, contractors, and members of the public entering and using Sanitation District facilities must maintain physical distance of six feet between themselves and any other person. Momentary exposure, which is while persons are in movement, is permitted.

2. In cases where physical distancing is not feasible, face coverings, as defined in Section V(D), shall be used.

3. Physical barriers (i.e., plexiglass, partition walls) may be erected in office environments to provide separation and reduce risk of COVID-19 transmission.

4. To the extent that existing arrangements of workstations or furniture, including in break rooms or lunchrooms, do not provide for adequate spacing, they must be rearranged to provide for such spacing. If furniture cannot be rearranged to allow for adequate spacing, seats or desks that would encroach on the six-foot distance must be clearly marked as prohibited for use or barriers erected to provide physical separation.

5. Occupant loads in buildings or spaces may be established based on the number of people that can easily maintain a minimum six-foot physical distance from others.

6. Waiting areas must be rearranged to discourage employees, contractors, or members of the public from waiting or sitting within six feet of one another. Furniture can be covered, marked, or removed to meet this requirement.

7. The number of individuals riding in elevators shall be limited to one or two persons and face coverings shall be worn, based on the size of the elevator. Signs must be posted outside all elevators, stating the maximum number of occupants and face covering requirement.

8. Where employees may form lines for products or services, appropriate markings must be placed at six-foot intervals to indicate where employees should stand while waiting to provide adequate spacing.

9. Employees are prohibited from engaging in handshakes, hugs, or any other unnecessary physical contact with any person while on Sanitation District premises or while on duty outside of their home (telework) workspace.

10. Common areas may be closed, restricted, or have physical barriers installed where personnel are likely to congregate and interact, such as administrative workstations and receptionist counters.

11. Employees shall not congregate in restrooms, hallways, stairways, lunchrooms, or any other confined area.

12. If an unanticipated situation arises where employees must be near one another, safe work practices such as maximizing social distance and wearing of face

coverings must be observed. Employees are expected to carry face coverings so they can be prepared to wear them when needed.

13. Sanitation District vehicles (including carts) shall be occupied by only one person. If two or more employees are required for a task in the field, they should ride in separate vehicles.

    a. Exemptions for more than one-person riding in the same vehicle (or cart) can be obtained from the Pandemic Response Team. Requests shall be made by the Department head and submitted to the Pandemic Response Team. The Pandemic Response Team will seek approval from the Executive Management Team (EMT), as needed based on requests received. The Pandemic Response Team may request specific engineering controls, administrative controls, or specific PPE to be implemented for a vehicle to be occupied by more than one person.

        1) Fleet Services is permitted to transport an employee who has vehicle break down or is involved in a motor vehicle accident. A Fleet Service employee will pick up the employee in either the Tour Bus or 12-Passenger Van. The driver and passenger shall sit at opposite ends of the vehicle with windows down and air-recirculation off. Both driver and passenger must wear face coverings and wipe down the vehicle after transport.

D. Face Coverings

1. Face coverings must be worn indoors, outdoors, and where required by orders from the CDPH or local health department. The following exceptions apply:

    a. When an employee is alone in a room, office, or shop. Interactions with others within an office require face coverings. A room or office is defined as having its own four walls and attached ceiling.

    b. While eating and drinking at the workplace, provided six feet is maintained from other persons.

    c. When wearing respiratory protection in accordance with the Sanitation District's Respiratory Protection Program (SOP-109), Personal Protective Equipment (SOP-205), and Cal/OSHA safety order for respirators (8 CCR 5144).

    d. Employees who cannot wear face coverings due to a medical or mental health condition or disability, or who are hearing-impaired or communicating with a hearing-impaired person.

        1) If an employee has a condition that makes them unable to wear a face covering, consult the Human Resources Department, who will evaluate the situation on a case-by-case basis.

        2) Employees who are exempted due to medical condition, mental health condition, or disability shall wear an effective non-restricted alternative, such as a face shield with a drape on the bottom, if their condition or

disability permits it. Exemption must be approved by the Human Resources Department.

e. Specific tasks which cannot feasibly be performed with a face covering. Note: This exception is limited to the period in which such tasks are being performed, and the unmasked employee shall be at least six feet away from all other unmasked persons.

2. Employees should always carry a face covering on them if they are working alone in a room, office, or shop in the event a person enters the space.

3. Face coverings are not designed to protect the wearer and are not personal protective equipment (PPE). A respirator is not required for wastewater workers to protect against the COVID-19 virus, but employees who choose to wear a respirator must comply with SOP-109, SOP-205, and 8 CCR 5144.

4. Face coverings can help prevent people from transmitting the virus to others by reducing the number of infectious particles that are released into the air when they speak, cough or sneeze.

5. Face coverings do not replace the need for physical distancing and frequent hand cleaning. Disposable face coverings are available at the warehouse for employee use. Based on availability of disposable face coverings, the Sanitation District reserves the right to restrict the duration in which disposable face coverings are provided to an employee. The disposable face coverings are distributed weekly to supervision or can be picked up from the warehouse directly.

6. Face coverings shall not be shared.

7. A face covering is a material that covers the nose and mouth. It may be secured to the head with ties or straps or wrapped around the lower face. It may be made of a variety of materials, such as cotton, silk, or linen. Acceptable cloth face covering options include, but are not limited to, homemade or store-bought reusable cloth face coverings, gaiters, and store-bought disposable masks. Face coverings shall:

   a. Fit snugly but comfortably against the side of the face.

   b. Be secured with ties or ear loops.

   c. Include at least two layers of fabric or material.

   d. Completely cover the nose and mouth.

   e. Allow for breathing without restriction.

8. If reusable, be able to be laundered and machine dried without damage or change to shape.

9. Employees shall practice strict hand washing before and after touching and adjusting the mask.

10. A face covering that no longer covers the nose or mouth, has stretched out, has damaged ties or straps, cannot remain securely attached to a person's face, has holes or tears in the fabric, and/or obstructs an employee's vision do not comply with this policy. An employee or member of the public must immediately replace their face covering under these circumstances or leave the facility.

11. Reusable cloth face coverings should be washed frequently, ideally every day. A washing machine should be sufficient for properly washing a face covering.

E. In-Person Meetings and Trainings

1. In-person meetings and trainings must be replaced with other means of communication, including but not limited to telephone calls, e-mails, or videoconferences. Non-essential meetings must be canceled or postponed.

2. Exemptions for in-person meetings and trainings can be provided with prior approval from the Pandemic Response Team. Requests shall be made by the Department head and submitted to the Pandemic Response Team. The Pandemic Response Team will seek approval from the Executive Management Team (EMT), as needed based on meeting or training requests received. The Pandemic Response Team may request specific engineering controls, administrative controls, or specific PPE to be implemented for the meeting or training to occur.

F. Social Visits to be Avoided

1. Employees must refrain from unnecessary social visits to other employees' workstations.

2. Employees are discouraged from permitting social visitors (visitors who are not on official business) into any non-public areas of any Sanitation District facility. When and where such social visits do occur, social distancing shall be observed.

G. Remote Public Access to Meetings

1. In accordance with the Brown Act (California Government Code 54950 *et. seq*.,), members of the public wishing to attend open session meetings of the Board and Committee may do so remotely. Information regarding how to attend remotely will be posted on the Sanitation District's website.

2. Attendance in person will be permitted by the General Manager (or their Designee) when an assessment is made by the Pandemic Team that it is reasonably safe to do so.

H. Required Posting and Distribution

1. Signs must be placed at conspicuous places at all public entrances that instruct employees, contractors, and members of the public not to enter if they are experiencing symptoms associated with COVID-19.

2. The signs must also instruct persons who are not experiencing these symptoms and who can enter the facility to follow safe work practices such as wearing face coverings, maintaining six feet of distance between themselves and others while inside, and good hygiene practices.

VII. Cleaning, Disinfection and Decontamination

A. General

1. The CDC recommends cleaning and disinfecting the workplace to reduce the risk of exposure to COVID-19. Normal routine cleaning removes germs and dirt from surfaces and lowers the risk of spreading the virus. Disinfection kills germs on surfaces, which can lower the risk of spreading infection.

2. Employees shall avoid sharing phones, work supplies, and office equipment, and tools wherever possible. Where such items must be shared, disinfect between shifts or uses, whichever is more frequent, including the following: shared office equipment such as copiers, fax machines, printers, telephones, keyboards, staplers, surfaces in reception areas, shared workstations, etc., with a cleaner appropriate for the surface.

3. Restrooms and locker rooms will stay operational and stocked. Adequate supply of soap, cleaners, paper towels, and hand sanitizers are available.

4. Only Environmental Protection Agency (EPA)-approved cleaning supplies shall be used, including ready-to-use sprays, concentrates, and wipes. Cleaning supplies shall be supplied by the Sanitation District and approved for use by Risk Management. Safety data sheets (SDS) shall be available for each cleaning product and an electronic copy stored in the Sanitation District's SDS database.

5. Any items (i.e., pens, clipboards) handled by contractors or visitors, including, but not limited to, visitor badges, clipboards, or pens, must be taken out of circulation after each use and not be used again until wiped down with effective disinfectants.

B. Cleaning and Disinfection

1. Cleaning Practices for Outdoor Areas

   a. The virus that causes COVID-19 naturally dies within hours to days in typical outdoor environments. Warmer temperatures and exposure to sunlight reduces the time the virus survives on surfaces and objects. Outdoor areas generally require normal routine cleaning and do not require disinfection.

   b. The Sanitation District will maintain existing cleaning and hygiene practices of outdoor areas.

2. Cleaning and Disinfecting Practices for Indoor Areas

   a. The virus that causes COVID-19 has not been shown to survive on surfaces longer than seven (7) days. Therefore, if an indoor area has been unoccupied for seven (7) days or more, the Sanitation District will conduct normal routine

cleaning of that area consistent with its existing cleaning and hygiene practices.

b. The Sanitation District will evaluate each building or facility to determine what kinds of surfaces make up each area. Most surfaces and objects will require only routine cleaning consistent with the Sanitation District's current practices.

c. Each workday, the Sanitation District will clean and disinfect frequently touched surfaces and objects, including but not limited to light switches, handrails, and doorknobs, to further reduce the risk of germs on those surfaces and objects. Cleaning and disinfection are performed daily by Sanitation District custodial service.

d. In addition to the efforts undertaken by the Sanitation District, every Sanitation District employee across all departments has an individual responsibility to contribute to this effort by routinely disinfecting surfaces and objects with which that employee interacts. The Sanitation District will provide effective disinfectants, such as disposable wipes or spray bottles containing bleach, throughout its buildings and facilities to be used to disinfect these items to assist employees in meeting their individual responsibilities.

e. The Sanitation District requires that the use of any cleaning and disinfectant products adhere to the instructions from each product's manufacturer related to concentration, application method, contact time, etc.

f. The Sanitation District prohibits the mixing of bleach and other cleaning and disinfection products together, as this can cause fumes that may be dangerous when inhaled. It is approved for qualified people in the laboratory to prepare dilutions of Sodium Hypochlorite with water for use as a disinfectant.

3. Provision of Sanitizing Supplies

a. Hand sanitizer or effective disinfectant will be made available near the entrance of any Sanitation District administrative office and in other appropriate areas for use by employees, contractors, and members the public, and in locations where there is high-frequency employee interaction.

b. Tissues and no-touch disposal receptacles will be placed at locations where they can be easily accessed by employees and members of the public.

4. Cleaning and Disinfecting Practices Related to Sanitation District Vehicles

a. The Sanitation District offers vehicle cleaning every Friday on-site at both Plant No.1 and Plant No. 2 facilities. Sanitation District vehicles can also be cleaned at approved off-site locations.

b. In addition to the efforts undertaken by the Sanitation District, employees must disinfect frequently touched surfaces and objects within a Sanitation District vehicle before and after use, if that vehicle is shared, or at the beginning and end of each shift, if no one else uses the vehicle during the employee's shift. The Sanitation District will provide disinfectants, such as disposable wipes, for this purpose.

C. Heating, Ventilating, and Air-Conditioning (HVAC) Systems

1. The Sanitation District will ensure that HVAC systems are properly maintained according to guidelines set forth by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

2. The Sanitation District will inventory and evaluate occupied building HVAC systems to ensure systems are operating at optimal performance. Systems will be equipped with the greatest minimum efficiency rating value (MERV) air filter that the system can safely handle, as well as maximize outside air intake to the extent feasible. Outside air may be reduced when Air Quality Index is greater than 100 for any pollutants or if letting in outdoor air by other means would cause a hazard to employees, for instance from excessive heat or cold.

D. Decontamination Services

1. Decontamination is performed by a contractor for credible, suspected or known COVID-19 cases. The decontamination service is performed by specially trained professionals using EPA-approved solutions.

2. Spaces selected for decontamination must be vacated until decontamination services can be completed. The Sanitation District shall prohibit entry into these spaces and post signage to notify occupants of such closure. The contractor may utilize sprays, foggers and misting equipment while wearing Level C PPE to eradicate the virus. Access by Sanitation District employees to areas under active decontamination is strictly prohibited.

VIII. Hand Cleaning

A. Hand cleaning is a basic infection prevention measure that must be implemented to reduce the spread of illness. Hand cleaning is completed using soap and water. Soap and water are available at all Sanitation District restrooms and break areas. Employees and visitors shall wash their hands for a minimum of 20 seconds with soap and water at the following intervals:

- Before, during, and after the work shift.
- Before preparing food or eating.
- Before and after caring for someone who is suspected of being sick.
- Before and after treating a cut or wound.
- After using the restroom.
- After touching equipment suspected of wastewater contamination.
- If your hands are visible dirty.
- After blowing nose, coughing, or sneezing.
- After touching the face.
- Before putting on or taking off a face covering.

B. Hands shall be cleaned with soap and water by:

1. Wetting hands with clean running water (warm or cold) and applying soap.

2. Lathering hands by rubbing them together with soap.

3. Scrubbing all surfaces, including palms, back and front of fingers, and under nails for 20 seconds.

4. Rinsing hands under clean, running water.

5. Drying hands using a clean, disposable towel.

C. Hand sanitizers should only be used when soap and water are not readily available. Overuse of hand sanitizer can dry and crack the skin and perhaps lead to a point of entry for germs. Hand sanitizers should not be used when hands are visibly dirty or greasy. Hand sanitizers are available for use by Sanitation District employees through the Warehouse (Item 67-03-4410).

D. Hands shall be cleaned with alcohol-based hand sanitizers by:

1. Applying sufficient product on hands to cover all surfaces.

2. Rubbing hands together until hands feel dry, which should take about 20 seconds.

3. Wash hands with soap and water as soon as it is available.

IX. Temperature and Symptom Screening

A. General

1. The CDC and CDPH recommends that employers implement measures designed to prevent or reduce the transmission of the virus that causes COVID-19 between and among employees at the workplace. One method for doing so is to require that employees submit to temperature testing and certify the absence of symptoms associated with COVID-19 prior to being allowed to enter any Sanitation District facility or worksite.

2. The purpose of this section is to prevent any individual who presents a fever or certifies that they have presented a symptom associated with COVID-19 from entering a Sanitation District facility or worksite to ensure the safety and health of Sanitation District workplaces.

3. Pursuant to Labor Code section 6300, et seq., and consistent with guidance provided by the Equal Employment and Opportunity Commission (EEOC) and the Department of Fair Employment and Housing (DFEH), the Sanitation District is authorized to adopt temperature testing and COVID-19 screening in order to ensure that individuals who present symptoms associated with COVID-19 do not enter Sanitation District facilities or worksites and to provide a healthy and safe workplace for Sanitation District employees who use such facilities and worksites.

4. The Sanitation District intends to comply with all applicable laws fully and faithfully, including, but not limited to, the Americans with Disabilities Act (ADA), the Rehabilitation Act of 1973, and the Fair Employment and Housing Act (FEHA) in the administration of this policy and associated protocol.

5. Employees shall immediately report to their supervisor or Human Resources Department, without fear of reprisal, COVID-19 symptoms, or possible COVID-19 exposures.

6. Any employee who fails to inform their supervisor or the Human Resources Department that they present a symptom associated with COVID-19 or who attempts to or does report to work despite the presentation of such a symptom or symptoms may face disciplinary action by the Sanitation District, up to and including termination.

B. Procedure

1. All employees, contractors, and visitors, on a daily basis, are to perform a self-administered screening for COVID-19 symptoms (including temperature) before entering the workspace. Employees may be directed at any time by management to perform screening on-site.

2. No person who presents a symptom prior to the start of the workday may report to work. Employees who develop symptoms after beginning their workday and after informing their immediate supervisor or the Sanitation District's Human Resources Department will be directed to leave work.

3. Before entering a Sanitation District facility, contractors and members of the public will be required to verbally or in writing attest to the absence of any symptoms associated with COVID-19.

4. Sanitation District employees will be required to complete a daily COVID-19 Symptom Screening Questionnaire. The Sanitation District will treat an employee refusing to submit to screening prior to or during their scheduled workday as an unexcused absence.

5. Symptom screenings (including temperature) will be conducted in instances where there may have been a potential on-site exposure to COVID-19. In those instances, the employees with potential exposure will be notified directly of actions required, including daily on-site screening for COVID-19 symptoms.

    a. On-site symptom screening will be self-administered.

    b. Upon arrival to the Sanitation District test location, employee shall:

        1) Wash their hands with soap and water for at least 20 seconds or, if soap and water are not available, use hand sanitizer with at least 60% alcohol.

        2) Wear a face covering.

3) Maintain social distancing between other persons.

4) Handheld thermometers shall be thoroughly cleaned in between each check. The thermometers shall be cleaned and disinfected according to manufacturer's instructions and facility policies.

C. Posting of Signage Notifying Employees and Members of the Public

1. At each Sanitation District facility and worksite, the Sanitation District will post signage informing employees, contractors, and members of the public of the Sanitation District's policy requiring screening prior to being allowed to enter the Sanitation District facilities and worksites.

2. A copy of the Sanitation District's COVID-19 Pandemic Response Program will be made available for review.

3. Each employee will be required to self-certify to the absence of symptoms associated with COVID-19 prior to being allowed to enter such facility or worksite.

X. Protocols for Employees Potentially Exposed to COVID-19

A. Employees within close contact of somebody who has tested positive for COVID-19 must quarantine for at least 10 days.

B. Individuals shall quarantine themselves in their home or another residence for 10 days from the last date that they were in close contact with a person that has been diagnosed with or likely to have COVID-19. They may not leave quarantine except to receive necessary medical care or obtain goods or services necessary for basic subsistence.

C. Face coverings shall be worn by individuals during the 10-day quarantine. When outside the home or at work, face coverings shall be worn for an additional four days after exposure. Individuals shall continue to monitor symptoms through day 14 and if symptoms occur, contact Human Resources for additional steps.

D. Exception to the 10-day Quarantine

1. All persons who reside in a high-risk congregate living setting (e.g., skilled nursing facilities or shelters) or with severely immunosuppressed persons (e.g., Bone marrow or solid organ transplants, chemotherapy) shall quarantine themselves in their home or another residence for 14 days from the last date that they were in close contact with a person that has been diagnosed with or likely to have COVID-19.

2. They may not leave their place of quarantine except to receive necessary medical care or to obtain such other goods or services necessary for their basic subsistence.

E. If an order to isolate or quarantine an employee is issued by the local or state health department official, the employee shall not return to work until the period of isolation or quarantine is completed or the order is lifted. If no period is specified, then the period

shall be 10 days from the time the order to isolate was effective or 14 days from the time the order to quarantine was effective.

F. The purpose of quarantine is to prevent the spread of illness.

G. During quarantine, employees shall watch for fever, cough, shortness of breath, or other symptoms of COVID-19.

H. If possible, stay away from others, especially those who are at higher risk for getting very sick from COVID-19.

XI. Protocols for Employees Experiencing COVID-19 Symptoms While at Work

A. If the employee displays **emergency warning signs** for COVID-19 such as difficulty breathing, chest pain or pressure, confusion, bluish lips or face, or other major life-threatening symptoms, the on-duty Supervisor / Manager shall:

1. Isolate the employee in place and remove non-essential personnel from the area.

2. Notify the employee's management team, Human Resources, and Risk Management as soon as possible.

3. When working at Plant No.1 or Plant No. 2

   a. Activate emergency response protocol by calling extension 2222 from Sanitation District landline or cell phone using 714-593-7133 (P1) or 714-593-7677 (P2).

   b. Control Center Operator will dispatch the Sanitation District Medical Response Team (MRT), notify Security, and contact emergency medical services (911).

4. When working at Mt. Langley, Outlying Pump Stations, and in the Collections System Service Area:

   a. Activate emergency response protocol by calling 911 from a cell phone or landline.

5. When working on Sanitation District's marine vessel, the Nerissa

   a. Isolate the employee on the starboard stern quarter and return to port.

   b. Activate emergency response protocol by calling 911 from a cell phone.

   c. Notify the employee's supervisor as soon as possible.

B. If an employee is experiencing mild to severe COVID-19 symptoms while working at a Sanitation District facility, the on-duty Supervisor / Manager shall:

1. Request that the symptomatic employee put on a face covering, if not already wearing one.

2. Isolate the employee to prevent potential spread of illness.

   a. When working at Plant No. 1 or Plant No. 2:

1) If the employee is assigned to an office with a closable door, direct the employee to isolate in their office.

2) If the employee is not assigned to an office with a closable door, direct the individual the nearest on-site Sanitation District COVID isolation room (P1 Purchasing Conference Room, P2 Risk Management Conference Room). A chair, cot, and water are provided in a labeled container in the isolation rooms.

b. When working at Mt. Langley, Outlying Pump Stations, and in the Collections System Service Area:

1) If the employee does not have access to an office with a closable door, the employee may isolate in an outdoor location or in a vehicle.

c. When working on Sanitation District's marine vessel, the Nerissa

1) Isolate the employee on the starboard stern quarter and return to port as soon as possible.

3. The employee shall call the Company Nurse hotline at (877) 518-6702. If COVID-19 is suspected, the nurse will direct the employee to call the COVID-19 hotline or their Primary Care Physician (PCP) to receive the mandatory CDC screening, which includes responding to a health questionnaire.

4. Instruct the employee to:

a. Return home for self-isolation.

b. Contact their PCP for further guidance and follow provided medical guidance. Employee shall stay in regular contact with their doctor.

c. Provide health status updates and anticipated return to work date to their supervisor and Human Resources Department.

d. Provide the Sanitation District with proof of medical clearance before returning to work.

e. Monitor their symptoms and seek prompt medical attention if their symptoms worsen.

5. Contact Risk Management regarding work locations accessed by the symptomatic employee, lockdowns, and requests for disinfection.

C. If the individual is instructed that testing is required, they will be directed to test at their medical provider's test site (if one is available) or a CDPH approved COVID-19 test facility. Due to challenges of obtaining testing supplies and PPE for healthcare providers conducting tests, testing may be restricted at times to high priority groups, as determined by CDPH or local public health department. Test results can take up to 24-72 hours based on the testing facility capacity.

D. If the individual is instructed that testing is not required, the Sanitation District may still require the employee to self-isolate and to provide proof of medical clearance before

returning to work. Refer the employee to Human Resources Department for further assistance.

XII. Employer Notice and Reporting Requirements

A. When the Sanitation District receives notice of a potential exposure to COVID-19, the Sanitation District will provide written notice to all Sanitation District employees, Contractors, and Subcontractors working at the same worksite within the infectious period (48 hours prior to notification).

B. Written notice will also be provided for a person who has a laboratory confirmed COVID-19 case, a positive diagnosis by a licensed health care provider, a COVID related isolation order by a public health officer, or death due to COVID as determined by the county public health department.

C. The notice will be provided via email (Sanitation District and Contractor employees) and/or on myOCSD intranet site (Sanitation District employees only) within 24 hours of knowledge by the Sanitation District.

D. The bargaining unit representatives of Sanitation District employees subject to potential COVID-19 exposure will be notified in addition.

E. The Sanitation District will provide the affected Sanitation District employees and bargaining units representatives with a notice regarding COVID-19 related benefits and leave rights, as well as employee's protections against retaliation and discrimination.

F. The Sanitation District will provide all Sanitation District employees, Contractors, and Subcontractors impacted by the potential COVID-19 exposure with the Sanitation District's plan for disinfection and updates to Sanitation District's safety procedure.

G. Exposure notices will be maintained for a period of three years.

XIII. Protocol for COVID-19 Cases

A. As soon as the Sanitation District is alerted that an employee has reported testing positive for COVID-19, Human Resources Department and Risk Management staff will:

1. Validate the diagnosis with a medical professional.

2. Contact the local public health department in which the employee resides to ensure they have been notified of the positive result.

3. Notify the Executive Management Team and the Administration Manager.

4. Determine who may have had a COVID-19 exposure by evaluating activities performed by the COVID-19 case and all locations in the workplace which the individual may have accessed during the high-risk exposure period.

5. Notify employee(s) who may have been exposed, and ask them to notify their PCP, and monitor for symptoms.

6. Notify employees who were potentially exposed to self-monitor, report any symptoms to their supervisor, contact their medical provider for further guidance, and obtain testing if required by their PCP.

7. Offer COVID-19 testing at no cost to employees during their working hours who may have had potential COVID-19 exposure and provide them with information on benefits available.

8. Notify Clean Harbors to immediately decontaminate the impacted work area and the adjacent common areas to include but not limited to restrooms, kitchens, break areas, and co-worker offices.

9. Notify all Sanitation District employees regarding any positive COVID-19 diagnosis. Notifications shall respect the privacy of all parties as much as possible.

10. Record the illness on the OSHA 300 log. Determine if work-related. If work-related, evaluate existing controls and work practices in place.

11. Refer all media inquiries to the Public Affairs Office.

12. Work with Orange County Health Care Agency to track employee absences.

13. Take guidance from the Orange County Health Care Agency on the ongoing response to the situation.

B. Return to Work Criteria:

1. COVID-19 cases with COVID-19 symptoms shall not return to work until:
   a. At least 24 hours has passed since a fever of 100.4 or higher without the use of fever reducing medicine, and
   b. COVID-19 symptoms have improved, and
   c. At least 10 days have passed since COVID-19 symptoms first appeared.

2. COVID-19 cases who tested positive but never developed COVID-19 symptoms shall not return to work until at least 10 days have passed since the date of their first positive COVID-19 diagnostic test assuming they have not subsequently developed symptoms since their positive test.

3. Negative COVID-19 tests shall not be required for an employee to return to work.

C. The Human Resources Department will document case status, test results, onset of symptoms for each COVID-19 case, which may include day and time the COVID-19 case was last onsite, the date of the positive COVID-19 tests and/or diagnosis, and the date the COVID-19 case first had one or more symptoms, if any were experienced. The Human Resources Department will also record the employee's name, contact information, occupation, location where the employee worked, the date of the last day at the workplace, and the date of the positive COVID-19 test. Information will be protected and confidential.

XIV. COVID-19 Outbreaks

A. Minor Outbreak

1. This section applies as identified by the local health department or when three or more COVID-19 cases occur in an exposed workplace within a 14-day period.

2. Employees who contract COVID-19 while teleworking are not to be included as a COVID-19 case unless the exposure occurred while the individual contracted the virus while at the workplace.

3. Employees who momentarily pass through the same space without interacting or congregating in the exposed workplace are not considered as a possible exposure case.

4. This section shall apply until there are no new COVID-19 cases detected in the workplace for a 14-day period. Employees who were exposed to a COVID-19 case while at work, will be excluded from the workplace for 10 days after the last known exposure.

5. For a minor outbreak, the Sanitation District will provide testing to all employees at the exposed workplace except for employees who were not present during the period of an outbreak identified by a local health department or the relevant 14-day period.

    a. Testing will be provided immediately and one week later. Negative test results shall not impact quarantine periods.

    b. After the first two tests are provided, the Sanitation District will continue to provide testing of employees who remain in the workplace at least one per week, until 14-day period has passed without a new COVID-19 case.

    c. The Sanitation District will investigate and determine possible workplace related factors that contributed to the COVID-19 outbreak. The investigation may include review of policies, procedures, and controls to address future outbreaks. Workplace reviews shall continue every 30 days that the outbreak continues.

    d. The Sanitation District will notify the local health department within 48 hours for any outbreak with names, number, occupation, and worksite location.

B. Major Outbreak

1. This section applies as identified by the local health department or when there are 20 or more COVID-19 cases in an exposed workplace within a 30-day period.

2. This section shall apply until there are no new COVID-19 cases detected in the workplace for a 14-day period.

3. The Sanitation District will provide testing to all employees at the exposed workplace twice per week except for employees who were not present during the

period of an outbreak identified by a local health department or the relevant 14-day period.

4. The Sanitation District will evaluate COVID-19 hazard controls, including review of HVAC system controls, need for respiratory protection, determine if specific operations are contributing to the outbreak, and identify other control options to prevent future outbreaks.

5. The Sanitation District will notify the local health department within 48 hours for any outbreak with names, number, occupation, and worksite location.

XV. Accommodations for Employees with Medical or Other Conditions

A. The Sanitation District provides for an accommodation process for employees who have a medical or other condition identified by the CDC or the employees' health care provider as placing or potentially placing the employees at increased risk of severe COVID-19 illness.

B. The CDC identifies the following medical conditions and other conditions as placing or potentially placing individuals at an increased risk of severe COVID-19 illness.

C. The CDC guidance provides that adults of any age with the following conditions are at increased risk of severe illness from the virus that causes COVID-19:

1. Cancer

2. Chronic kidney disease

3. COPD (chronic obstructive pulmonary disease)

4. Heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies

5. Immunocompromised state (weakened immune system) from solid organ transplant

6. Obesity (body mass index [BMI] of 30 kg/m2 or higher but < 40 kg/m2)

7. Severe Obesity (BMI ≥ 40 kg/m2)

8. Pregnancy

9. Sickle cell disease

10. Smoking

11. Type 2 diabetes mellitus

D. The CDC guidance also provides that adults of any age with the following conditions might be at an increased risk for severe illness from the virus that causes COVID-19:

1. Asthma (moderate-to-severe)
2. Cerebrovascular disease (affects blood vessels and blood supply to the brain)
3. Cystic fibrosis
4. Hypertension or high blood pressure
5. Immunocompromised state (weakened immune system) from blood or bone marrow transplant, immune deficiencies, HIV, use of corticosteroids, or use of other immune weakening medicines
6. Neurologic conditions, such as dementia
7. Liver disease
8. Overweight (BMI > 25 kg/m2, but < 30 kg/m2)
9. Pulmonary fibrosis (having damaged or scarred lung tissues)
10. Thalassemia (a type of blood disorder)
11. Type 1 diabetes mellitus

E. The Sanitation District will periodically review CDC, CDPH, and OCHCA websites to account for any additional medical conditions and other conditions that can place or potentially place individuals at an increased risk of severe COVID-19.

F. Sanitation District employees are encouraged to review the list of medical conditions and other condition provided above to determine whether they have such a condition.

G. To request an accommodation, employees may make a request with their manager or supervisor or the Human Resources Department.

XVI. Contact Tracing

A. If possible, the Sanitation District will interview the COVID-19 cases in order to ascertain the following information: (1) the date on which the employees tested positive, if asymptomatic, or the date on which the employees first presented COVID-19 symptoms, if symptomatic; (2) the COVID-19 cases recent work history, including the day and time they were last present at a Sanitation District worksite or facility; and (3) the nature and circumstances of the COVID-19 cases' contact with other employees during the high-risk exposure period, including whether there were any close contact COVID-19 exposure.

B. If the Sanitation District determines that there were any close contact COVID-19 exposures, the Sanitation District will instruct those employees to remain at their home or place of residence and not report to work until such time as the employees satisfy the minimum criteria to return to work.

XVII. Testing Requirements for COVID-19

A. General

1. The EEOC issued updated Technical Assistance Questions and Answers ("Guidance") concerning the ADA and Rehabilitation Act. The Guidance states that, despite certain restrictions under the ADA and the Rehabilitation Act concerning medical-related testing in the workplace, an employer may choose to administer COVID-19 testing to employees before they enter the workplace to determine if the employee has the virus. This would be primarily for the purpose of ensuring the health and safety of the workplace.

2. Pursuant to Labor Code section 6300, et seq. [and any applicable state or local public health orders], and consistent with the EEOC's April 23, 2020 Guidance [and any guidance that the DFEH may provide and any applicable state or local public health orders, the Sanitation District is authorized to adopt this COVID-19 testing requirement.

3. Testing will be provided to employees at no cost for employees who had COVID-19 exposure. Employees will be notified regarding possible consequences of a positive test. Testing will be provided during working hours.

B. Scope of Coverage

1. On a case-by-case basis, the Sanitation District is authorized to determine that this policy will not apply to an employee if the General Manager, EMT, or Human Resources Department determines that testing such an employee is not job related or consistent with business necessity.

2. Testing may not be job related or consistent with business necessity for a particular employee if his or her job responsibilities do not result in contact with or proximity to other people, including other employees or members of the public.

C. Acknowledgement of Agreement to Submit to Testing

1. The Sanitation District may require that employees acknowledge receipt of the notice and execute an agreement submitting to testing for the virus that causes COVID-19. Such agreement will include a Confidentiality of Medical Information Act (CMIA) authorization for release of the test results to the Sanitation District.

D. Refusal to Submit to Testing

1. The Sanitation District will place any employee who refuses to submit to testing in accordance with the testing protocol associated with this policy on unpaid leave. The employee may then elect to use any earned or accrued leave to which they are entitled to provide compensation during the time away from work.

E. Notification of Test Results

1. The Sanitation District or a test center will notify the employee of test results in writing and in a confidential manner. In the event of a positive COVID-19 test result, the Sanitation District or the test center will also inform the employee by phone call so that the employee may consult with their health care provider and take precautionary measures to prevent transmission of the virus.

F. Test Results and Any Other Health or Medical Records

1. The Sanitation District will store test results and any other health or medical records, in a manner consistent with applicable law and in accordance with the Sanitation District practice for storing medical information in a file separate from the employee's personnel file.

G. Leave Status of Employee with Positive COVID-19 Diagnosis

1. The Sanitation District will place any employee who tests positive for the virus that causes COVID-19 on paid sick leave status for the remainder of the day following the positive diagnosis. Thereafter, the employee may elect to remain on paid sick leave if they have a balance of such leave, may elect to use Emergency Paid Sick Leave, as provided under the Families First Coronavirus Response Act if they have a balance of such leave, may elect another form of other earned or accrued leave, or may take such leave on an unpaid basis.

H. Reservation of Right to Require Additional or Subsequent Testing

1. The Sanitation District expressly reserves the right to require that employees submit to additional or subsequent tests to ensure healthy and safe working conditions for all employees.

XVIII. Communications and Training

A. This program was communicated to all workers and necessary training will be provided. Additional communication and training will be ongoing and provided to all workers who did not receive the initial training.

B. Employees shall be trained on the following:

- Information on COVID-19, including how to prevent the spread of the virus and underlying health conditions.
- Self-screening at home, including temperature and symptom checks.
- Importance of not coming to work if employees have COVID-19 symptoms, including frequent cough, fever, difficulty breathing, chills, muscle pain, headache, sore throat, recent loss of taste or smell, or if they or someone they live with have been diagnosed with COVID-19.
- How to seek medical attention if their symptoms are severe, including persistent pain or pressure in the chest, confusion, or bluish lips or face.
- Importance of hand cleaning.

- Importance of physical distancing, both at work and off work time.
- Proper use of face coverings.

C. Instructions will be communicated to vendors about how drop-off, pick-up and delivery will be conducted to ensure social distancing between the customer, the worker, and other customers, and about the recommendation that customers use face masks when dropping off, picking up or accepting delivery.

XIX. Recordkeeping

All records created or generated in the course of this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The Sanitation District Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of Sanitation District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XX. References

ADM-SOP-600, Injury and Illness Prevention Program

Title 8, California Code of Regulations (CCR), Section 3203, Injury and Illness Prevention Program

Title 8, CCR, Section 3205, COVID-19 Prevention

Title 8, CCR, Section 3366, Washing Facilities

Title 8, CCR, Section 3457, Field Sanitation

XXI. Revision History

Version	Date	By	Reason
1.0	7/2/2020	Frattali, John	New
2.0	12/30/2020	Frattali, John	Compliance with Title 8, California Code of Regulations, Section 3205 for COVID-19 Prevention (new regulation effective 11/30/2020). Refer to Policy Change Log for specific updates.

XXII. Attachments

A. Workplace Risk Assessment

B. Risk Mitigation Strategies

COVID Site-Specific Risk Assessment

Risk of Exposure Definitions (assumes average use, occasions of higher occupancy increase risk). Risk levels were based on the perceived likelihood of exposure to other employees in terms of proximity, frequency, and duration.

Minimal - Working alone or easily able to maintain greater than 6 feet of social distance, not likely to result in illness.
Low - Brief interactions with other employee such as passing others in a hallway
Medium - Intermittent exposures to other staff in common work areas (i.e., reception areas, conference rooms, lunch break rooms)

High - Prolonged exposure to other employees in work areas where social distance cannot be maintained such as a shared small office or workspace.

Wastewater Treatment Plant structures and offsite Pump Stations are not included in this assessment as these areas are not normally occupied. Work planning must be used to maximize social distancing and instances where face coverings or similar protection measures must be observed. Contact Risk Management for any concerns.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
All	Personnel	N/A	Low	A-1	COVID-19 Training
All	Personnel	N/A	Low	A-3	Cleaning Supplies - availability. Evaluate cleaning supply needs for when staff return to workplace.
All	Personnel	N/A	Low	A-3	Hand Sanitizer - availability. Evaluate sanitizer needs for when staff return to workplace.
All	Personnel	N/A	Low	A-7	Face Coverings - availability. Evaluate mask supply needs for when staff return to workplace.
All	Fleet Vehicles	N/A	Medium	A-3	Provide hand sanitizer and cleaning supplies inside each vehicle.
P1	Guard Stations (all)	One person office	Low	A-8	Post signs entering facility or structure.
P1	Administration Building	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Administration Building	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Administration Building	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Administration Building	Hallway	Low	E-20	Remove chairs outside of AGM Thompson's office.
P1	Human Resources	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Administration Building	Main Lobby	Medium	E-20	Remove or cover furniture located in waiting area.
P1	Administration Building	Lunch Room and Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Administration Building	Conference Rooms (all) / Board Room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Administration Building	Breakout Space (outside Conf A-C)	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Administration Building	Atrium	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Administration Building	Exterior Seating	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Administration Building	Elevators	Medium	A-8	Post signs at elevator limiting riders.
P1	Administration Building	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Human Resources	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Human Resources	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Risk Management	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Human Resources	Reception Area	Medium	E-20	Remove or cover furniture located in waiting area.
P1	Laboratory	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Control Center	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P1	Human Resources	Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Human Resources	Conference Room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Human Resources	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Risk Management	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Risk Management	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Fleet Services	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Warehouse and Purchasing	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Risk Management	Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Risk Management	Security Monitoring Station	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Risk Management	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Laboratory	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Laboratory	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Building A	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Laboratory	Entry and Lobby	Medium	E-20	Remove or cover furniture located in waiting area.
P1	Laboratory	Showers	Low	A-10	Showers to occur in shifts.
P1	Laboratory	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	Laboratory	Laboratory - Chemistry Lab	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P1	Laboratory	Laboratory - Inorganics Lab	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P1	Laboratory	Laboratory - Chromatography Lab	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P1	Laboratory	Laboratory - Inorganic Instrumentation Lab	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P1	Building B & 3	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Laboratory	Break Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Laboratory	Break Room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Laboratory	Conference Room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Laboratory	Elevators	Medium	A-8	Post signs at elevator limiting riders.
P1	Laboratory	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Control Center	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Control Center	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Building 5 & 6	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Control Center	Main Entrance Lobby	Medium	E-20	Remove or cover furniture located in waiting area.
P1	Control Center	Showers	Low	A-10	Showers to occur in shifts.
P1	Control Center	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P1	Control Center	Lunch Room and Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Control Center	Conference Rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Control Center	Control Room	Low	A-8	Post signs to contact control room for inquiries. Post sign for entrance by authorized personnel only.
P1	Control Center	Control Room	Medium	A-5	Keep door closed at all times. Install sign to keep door closed and access for authorized persons only.
P1	Control Center	Pass Down Room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Control Center	Intern Workspace - 2nd Floor	High	A-6	Limit intern workspace to only 2 interns.
P1	Control Center	Control Room	Medium	E-2	Modify/install slinding window or door for chemical drivers in control center control room.
P1	Control Center	Elevators	Medium	A-8	Post signs at elevator limiting riders.
P1	Control Center	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Fleet Services	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Fleet Services	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Engineering Trailers A, B, E & F	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Fleet Services	Break Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Fleet Services	Break Room	Medium	A-4	Consider implementing meal shifts so that physical distancing can be maintained.
P1	Fleet Services	Locker Room	Low	A-10	Showers to occur in shifts.
P1	Fleet Services	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	Mt. Langley	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Fleet Services	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Warehouse and Purchasing	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Warehouse and Purchasing	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P2	Operations Center	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Warehouse and Purchasing	Warehouse Cubicles	High	E-3	Increase height of cubicle walls.
P1	Warehouse and Purchasing	Receiving Window	Medium	A-8	Post signs at receiving window with protocol for delivering equipment, signing, etc.
P1	Administration Building	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Warehouse and Purchasing	Lunch Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Warehouse and Purchasing	Conference rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Warehouse and Purchasing	Reception Area	Medium	E-20	Remove or cover furniture located in waiting area.
P2	Maintenance Building	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Warehouse and Purchasing	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Building A	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Building A	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P2	Warehouse	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P1	Human Resources	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Risk Management	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Building A	Lunch Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Building A	Fitness Center	High	E-19	Establish control for use.
P1	Building A	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Building B & 3	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Building B & 3	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P2	Construction Management Trailers 1 - 5	Entrances	Low	A-9	Provide thermal temperature scanners. Identify technology and application for kiosks.
P1	Building A	Locker Room	Low	A-10	Showers to occur in shifts.
P1	Building B & 3	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	Building B & 3	Lunch Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Building B & 3	Common wall cubicles	Medium	E-3	Increase height of cubicle walls.
P1	Building B & 3	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Building 5 & 6	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Building 5 & 6	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Administration Building	Main Lobby	Medium	E-2	Install plexiglass barrier at employee workstation.
P1	Building 5 & 6	Conference Rooms	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Building 5 & 6	2nd Floor Cubicle Area	High	E-3	Increase height of cubicle walls.
P1	Building 5 & 6	2nd Floor Cubicle Area	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P1	Laboratory	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Control Center	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Building 5 & 6	BLDG 6 - Locker Room	Low	A-10	Showers to occur in shifts.
P1	Building 5 & 6	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	Building 5 & 6	Lunch Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Building 5 & 6	Lunch Room	Medium	E-20	Remove chairs so only one person per table.
P1	Building 5 & 6	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Engineering Trailers A, B, E & F	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Engineering Trailers A, B, E & F	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Human Resources	Lourdes Luna Work Station	Medium	E-2	Install plexiglass barrier at employee workstation.
P1	Engineering Trailers A, B, E & F	Lactation Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Fleet Services	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Warehouse and Purchasing	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P1	Engineering Trailers A, B, E & F	Conference Rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Engineering Trailers A, B, E & F	Kitchen / Break Area	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Engineering Trailers A, B, E & F	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	T&D Control Room, Break Room an	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Building A	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	T&D Control Room, Break Room an	Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	T&D Control Room, Break Room an	Break Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	T&D Control Room, Break Room an	Break Room	Medium	E-20	Remove chairs so only one person per table.
P1	T&D Control Room, Break Room an	Control Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	T&D Control Room, Break Room an	Elevator	Medium	A-8	Post signs at elevator limiting riders.
P1	Truck Loading Control Room	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Building 5 & 6	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Truck Loading Control Room	Restroom	Low	A-3	Cleaning solution to be available for users before/after using restroom.
P1	Blower Building 2 Office Area	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Engineering Trailers A, B, E & F	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Blower Building 2 Office Area	Small sample lab	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Blower Building 2 Office Area	Control Room	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Mt. Langley	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	Mt. Langley	Entrances and Exits	Low	A-3	Provide hand sanitizer station at all major entrances/exits.
P1	Human Resources	Marie Martin Work Station	Medium	E-2	Install plexiglass barrier at employee workstation.
P1	Mt. Langley	Conference Rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P1	Mt. Langley	Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	Mt. Langley	Restrooms	Medium	A-2	Discuss with property manager available controls they can implement (signs, masks required, etc.)
P1	CENGEN Control Room Only	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	CENGEN Control Room Only	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	CENGEN Control Room Only	Elevator	Medium	A-8	Post signs at elevator limiting riders.
P1	CENGEN Control Room Only	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	DAFT Control Room Only	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P1	DAFT Control Room Only	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	T&D Control Room, Break Room an	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	DAFT Control Room Only	Small sample lab	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	PCI Trailers	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P1	PCI Trailers	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Truck Loading Control Room	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	PCI Trailers	Kitchen / Break Area	Medium	A-8	Post signs for self-cleaning and physical distancing.
P1	PCI Trailers	HVAC	Minimal	E-4	Maintain HVAC in good condition
P2	Guard Stations (all) - P2	One person office	Low	A-8	Post signs entering facility or structure.
P2	Operations Center	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Operations Center	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Risk Management	Karen Turnbaugh Cubicle	Medium	E-2	Install plexiglass barrier at employee workstation.
P2	Operations Center	Main Entrance Lobby	Medium	E-20	Remove or cover furniture located in waiting area.
P2	Operations Center	Showers	Low	A-10	Showers to occur in shifts.
P2	Operations Center	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	Blower Building 2 Office Area	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	DAFT Control Room Only	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P1	Laboratory	Sample Receiving	Medium	E-22	Evaluate and implement a procedure to reduce exposures during sample hand off.
P2	Operations Center	Control Center Station	Low	A-8	Post signs to limit number of Operations staff behind counter.
P2	Operations Center	Lunch Room and Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P2	Operations Center	Lunch Room and Kitchen	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Operations Center	Conference Rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Operations Center	Training Room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Operations Center	Elevator	Medium	A-8	Post signs at elevator limiting riders.
P2	Operations Center	Passdown room	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Operations Center	Fitness Center	High	E-19	Establish control for use.
P2	Operations Center	HVAC	Minimal	E-4	Maintain HVAC in good condition
P2	Maintenance Building	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Maintenance Building	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P2	Maintenance Building	Showers	Low	A-10	Showers to occur in shifts.
P2	Maintenance Building	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P1	PCI Trailers	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Operations Center	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Maintenance Building	Conference Rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Maintenance Building	Elevator	Medium	A-8	Post signs at elevator limiting riders.
P2	Maintenance Building	Lunch Room and Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P2	Maintenance Building	Lunch Room and Kitchen	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Maintenance Building	Maintenance Shop Office Space - 1st Fl	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P2	Maintenance Building	Collections Shop Office Space - 1st Fl	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P2	Maintenance Building	Electrical Shop Office Space - 2nd Fl	High	E-3	Increase height of cubicle walls.
P2	Maintenance Building	Electrical Shop Office Space - 2nd Fl	High	E-1	Relocate some staff to vacant spaces to maintain 6 feet.
P2	Maintenance Building	HVAC	Minimal	E-4	Maintain HVAC in good condition
P2	Distribution Center J Sample Area and Restroom	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Distribution Center J Sample Area and Restroom	Entrances and Exits	Medium	A-8	Post signs for self-cleaning and physical distancing.
P2	Distribution Center H Control Room Only	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Maintenance Building	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Distribution Center H Control Room Only	Entrances and Exits	Medium	A-8	Post signs for self-cleaning and physical distancing.
P2	Warehouse	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Warehouse	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P1	Warehouse and Purchasing	Reception Area	Medium	E-2	Install plexiglass barrier at employee workstation.
P2	Warehouse	Service counter	Medium	A-8	Post signs at receiving window with protocol for delivering equipment, signing, etc.
P2	Distribution Center H Control Room Only	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Warehouse	Two person office	High	E-3	Increase height of cubicle walls.
P2	Warehouse	HVAC	Minimal	E-4	Maintain HVAC in good condition
P2	Centrifuge Building Control Room Only	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Warehouse	Restrooms (single use)	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Truck Loading Control Room Only	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Centrifuge Building Control Room Only	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Truck Loading Control Room Only	Restroom	Low	A-3	Cleaning solution to be available for users before/after using restroom.
P2	CENGEN Control Room and Restrooms Only	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	CENGEN Control Room and Restrooms Only	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P2	CENGEN Control Room and Restrooms Only	Locker/Shower Room	Low	A-3	Cleaning solution to be available for users before/after showering.
P2	Truck Loading Control Room Only	Restroom	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	CENGEN Control Room and Restrooms Only	Lunch Room and Kitchen	Medium	A-8	Post signs for self-cleaning and physical distancing.
P2	CENGEN Control Room and Restrooms Only	Lunch Room and Kitchen	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	CENGEN Control Room and Restrooms Only	Elevator	Medium	A-8	Post signs at elevator limiting riders.
P2	CENGEN Control Room and Restrooms Only	HVAC	Minimal	E-4	Maintain HVAC in good condition
P2	West RAS Control Room	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.

Plant	Asset	Work Area Type	Risk	Control Code	Control Description
P2	East RAS Control Room	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Construction Management Trailers 1 - 5	Entrances and Exits	Low	A-8	Post signs at building entrance doors notifying occupants of entry requirements.
P2	Construction Management Trailers 1 - 5	Entrances and Exits	Low	A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
P2	Operations Center	Control Center Station	Medium	E-2	Install plexiglass barrier at employee workstation.
P2	CENGEN Control Room and Restrooms Only	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Construction Management Trailers 1 - 5	Restrooms	Medium	A-8	Post signs in restrooms on handwashing and physical distancing.
P2	Construction Management Trailers 1 - 5	Conference Rooms	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Construction Management Trailers 1 - 5	Kitchen / Break Area	Medium	A-8	Post signs for self-cleaning and physical distancing.
P2	Construction Management Trailers 1 - 5	Kitchen / Break Area	Medium	E-18	Limit occupancy by removing chairs and tables. Setup for physical distancing.
P2	Construction Management Trailers 1 - 5	Kym Smith Cubicle	Medium	E-2	Install plexiglass barrier at employee workstation.
P2	Construction Management Trailers 1 - 5	HVAC	Minimal	E-4	Maintain HVAC in good condition
P1	Administration Building	Engineering Counter	Medium	E-2	Install plexiglass barrier at employee workstation.
P1	Laboratory	Sample Counter	Medium	E-2	Install plexiglass barrier at employee workstation.
P1	Administration Building	IT	Medium	E-2	Relocate staff (Room 252A & Help Desk) to vacant spaces to maintain 6 feet.

Attachment B – **Risk Mitigation Strategies**

Engineering Controls	
E-1	Relocate some staff to vacant spaces to maintain 6 feet.
E-2	Install plexiglass barrier at employee workstation.
E-3	Increase height of cubicle walls to a minimum of five feet.
E-4	Evaluate HVAC system for air cleaning upgrades (filters; UV)
E-5	Increase air filtration to as high as possible (MERV 13) without significantly diminishing design airflow.
E-6	Increase percentage of outdoor air, potentially as high as 100% (verify system compatibility).
E-7	Increase total airflow supply to occupied spaces, if possible.
E-8	Inspect filter housing and racks to ensure appropirate filter fit and check for ways to minimize filter bypass.
E-9	Disable demand-control ventilation controls that reduce air supply based on temperature or occupancy.
E-10	Consider using UV irradiation to supplement HVAC system.
E-11	Consider using natural vventilation (i.e., open door or window) to increase outdoor air.
E-12	Ensure exhaust in restrooms are functional.
E-13	Run building ventilation system during unoccupied times to maximize dilution.
E-14	Use portable high-efficiency particulate air (HEPA) fans/filtration systems.
E-15	Close unrinals / stalls where physical distancing cannot be maintained.
E-16	Install tape marks or other visual cues such as decals or colord tape on the floor, placed 6 feet apar to indicate where to stand.
E-17	Limit intern workspace to only 2 interns.
E-18	Limit occupancy by removing chairs and tables. Setup for phyiscal distancing.
E-19	Prohibit use until completion of Phase 3 (all onsite; no OCSD cases; normal operations resume)
E-20	Remove chairs outside of AGM Thompson's office.
E-20	Remove chairs so only one person per table.
E-20	Remove or cover furniture located in waiting area.
E-21	Replace high-touch communal items (i.e., coffee pots, water coolers) with pre-packaged, single-serving items.
E-22	Utilize contact-free sample hand off.
Adminstrative Controls	
A-1	COVID-19 Training
A-2	Discuss with property manager available controls they can implement (signs, masks required, etc.)
A-3	Cleaning solution to be available for users before/after showering.
A-3	Cleaning solution to be available for users before/after using restroom.
A-3	Cleaning Supplies - availablity; personal and vehicles/carts
A-3	Encourage use of outdoor seating.
A-3	Provide hand sanitizer and cleaning supplies inside the control room.
A-3	Provide hand sanitizer station inside/outside all major entrances/exits.
A-3	Provide hand sanitizer and cleaning supplies inside each vehicle.
A-3	Hand Sanitizer - availability; personal and fixed locations
A-4	Establish meal shifts so that physical distancing can be maintained.
A-5	Keep door closed at all times.
A-6	Limit intern workspace to only 2 interns.

A-7	Prohibit handshaking, hugs, and fist bumps.
A-7	Wear face coverings
A-8	Post sign for self-cleaning and physical distancing.
A-8	Post signs at building entrance doors notifying occupants of entry requirements.
A-8	Post signs at elevator limiting riders.
A-8	Post signs at receiving window with protocol for delivering equipment, signing, etc.
A-8	Post signs entering facility or structure
A-8	Post signs for self-cleaning and physical distancing.
A-8	Post signs in restrooms on handwashing.
A-8	Post signs to contact control room for inquiries. Post sign for entrance by authorized personnel only.
A-8	Post signs to limit number of Operations staff behind counter.
A-9	Provide thermal temperature scanners.
A-10	Showers to occur in shifts.
A-11	Stagger start times and break times to reduce density of employees in common areas like break rooms, locker rooms.
A-12	Use no-touch waste receptacles when possible.

ORANGE COUNTY SANITATION DISTRICT	SOP-645 (Ver. 1) Hazard Identification and Risk Control (HARC)
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

The Hazard Assessment and Risk Control (HARC) program serves as the foundation for identifying hazards and assessing the associated health and safety risks in the Orange County Sanitation District (OC San) working environment and assisting in the identification of the means and methods of controlling those risks. The processes and tools described herein are the recommended tools to ensure standard and consistent approaches throughout the organization. These hazard identification and risk assessment tools are to be used to supplement such activities as but not limited to:

- Job Safety Analysis (JSA) development
- High hazard work permits
- Contractor safety orientation
- Determining the level of training staff or contractors need to complete.

II. Background

The California regulation for Injury and Illness Prevention Program (IIPP) requires that employers have procedures for identifying and evaluating workplace hazards, including, but not limited to:

- When new substances, processes, procedures, or equipment are introduced to the workplace that represent a new occupational safety and health hazard, and
- Whenever the employer is made aware of a new or previously unrecognized hazard.
- When occupational injuries and illnesses occur.
- When hiring and/or reassigning permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted.
- Whenever workplace conditions warrant an inspection for consistency with the IIPP

The HARC program and associated tools are to be applied for the identification of hazards, the assessment of the associated risks, and the identification of control methods applicable to the entire OC San operation. It is also to be applied when assessing the risks of hazards identified on individual projects (Pre-Use Analysis) and in the workplace (Job Safety Analysis) as described herein. The HARC process is the formal OC San tool to be applied to:

- Routine and non-routine activities at OC San facilities, including offices, laboratories, and field sites.
- Activities of all people having access to the workplace.
- Facilities and services at the workplace, whether provided or directly controlled by OC San or not (i.e., work completed by contractors, etc.) that could present hazards to OC San staff.

III. Definitions

Hazard is anything with the potential to cause personal injury or illness or poses potential of damage to property or the environment.

Health hazards including physical, chemical, biological, ergonomic, and psychological, are hazards associated with work. Typically, they involve long-term exposure, although short-term exposure can also result in a health hazard. Typical examples include, but are not limited to:

- Workplace exposure (e.g., to chemicals, noise, heat) that can lead to illness.
- Infections (e.g., insects, snakes, parasites, poisonous plants).
- Ergonomic conditions (e.g., excessive bending, improper lifting, reaching too high or too far and repetitive movements.
- Psychological conditions (e.g., aspects of work-related stress).

Risk is defined as: a combination of the chance or likelihood that a consequence will occur and the severity of that consequence.

Safety hazards may result in sudden, unwanted, incidents leading to injury (including, but not limited to, back strain, contusion, permanent or temporary disability, a broken arm, skin laceration, fatality, burn, fires, and explosions; spills on land or water) that are immediate in nature.

IV. Responsibilities

A. Risk Management

1. Risk Management is responsible to keep the HARC process updated and applicable to current OC San operations and that it works with and supports other OC San safety policies and procedures.
2. Risk Management will review and update the HARC Listing table, which provides a listing of the more likely hazards that OC San staff will encounter in the course of their work.
3. Risk Management issue and retain high hazard work permits to employees and contractors.
4. Risk Management will manage electronic JSAs developed for employee use.

B. Supervisors and Managers

1. Supervisors and Managers are responsible to assure that the HARC process is used on work sites and in the development of projects by employees they supervise.

2. Supervisors are responsible for implementing appropriate controls utilizing the hierarchy of controls and ensuring that staff are using JSAs and obtaining high hazard work permits.

C. All Employees

1. All OC San employees are responsible to use the HARC process to assess potential hazards of new or existing activities where applicable.

2. Employees must also read and understand all documented hazard identification and risk assessments conducted using the HARC process and documented in JSAs and other written plans that are associated with their work.

V. Hazard Assessment and Risk Control

A. General

1. Once the tasks of a project or work activity are thought through, and the hazards are identified or recognized, HARC assists in assessing the risk of those hazards.

2. The process provides a standardized means for ensuring that hazards and risk are assessed consistently from one activity to another. The HARC process assists in assessing the risk based on the following two questions:

   a. What is/are the (potential) severity of the consequence(s) when the hazard (that which has the potential to cause harm) occurs? and

   b. How likely is it that the unwanted consequence associated with the hazard would occur (likelihood)?

3. HARC has been incorporated into Job Safety Analysis that are completed using OC San's Incident Management Software, Cority.

4. OC San has also completed a HARC Listing table for twelve primary hazards identified at the OC San workplace, which includes biological, environmental, personal safety, chemical, gravity, pressure, driving, mechanical, radiation, electrical, motion, and sound hazards. Risk Management will maintain the HARC Listing table for OC San. HARC Listing table is provided as Attachment A.

B. Consequences and Likelihood

1. The HARC risk assessment process starts with listing, for each individual hazard, what the consequences could be if the controls for that hazard fail. During this step, it is important to consider that credible worst-case scenarios for one hazard can lead to more than one consequence depending on the situation. The HARC risk assessment process is comprised of a series of hazard analysis tables prepared to provide guidance to staff when completing the HARC process and prioritize corrective actions based on increased risk.

2. Subsequently, for each consequence, the risk is assessed using the “Risk Assessment Matrix” (RAM). During the development of this process, frequency was considered as a factor in the risk assessment process. However, as part of a behavior-based approach and belief that doing a task one time carries the same level of risk as doing it more frequently, and that the same level of hazard controls needs to be applied every time the task is performed, a conscious decision was made to not include the frequency of exposure to the hazard assessment and rating process. Workers should not think that completing a task less frequently eliminates or reduces associated risks.

3. The RAM is a tool that standardizes qualitative risk assessment to classify H&S risks into three categories: Low (green), Medium (orange areas) and High (red areas). It facilitates this classification process and does not require specific competencies to perform a sound risk assessment. The matrix axes, consistent with the definition of risk, are “Probability” and “Severity”. This classification results in different levels of risk control commensurate with the risk. The RAM is shown below:

Risk Assessment Matrix				
	Severity of Harm			
Probability	Minor	Moderate	Serious	Catastrophic
Remote	Low	Low	Low	Low
Unlikely	Low	Low	Medium	Medium
Likely	Low	Medium	High	High
Very Likely	Medium	High	High	High

4. The scale of probability from “remote” to “very likely” on the vertical axis is used to indicate increasing occurrence probability. The probability are those injuries that are likely to occur in the absence of controls.

5. After estimating the probability, the severity ratings from “minor” to “catastrophic” on the horizontal axis is estimated on the based on the likely consequence of incidence.

6. Estimation of the probability and the severity of consequences is not an exact science. The consequences are based on foreseen scenarios of what “might happen” and likelihood estimates are based on historical information that such a scenario has happened under similar conditions, knowing very well that circumstances are never the same.

7. When assessing the risk of a particular scenario, first estimate the severity of the potential consequence starting at the top. Ask the question: “in this particular situation can one or more catastrophes occur when all the risk control measures fail?” If this is not possible, move one box down (serious) and ask the question: “can a serious health effect occur?” If not, again move down one box (moderate) and ask the question: “can a moderate health effect occur?” Suppose the answer is yes, then the next step is the estimation of the likelihood that a “moderate health effect” occurs. In the RAM go first to the bottom probability: “very likely”. If this is not the case, move to the next box: “likely”. If the likelihood is less, move to next box:

"unlikely". Suppose this likelihood is correct, then the estimated risk is "low". This is considered a "low risk" in the RAM.

8. If consequences can occur to people and property from the same hazard, the risk will be assessed for both with the higher risk level being used for the overall risk ranking.

9. Likelihoods "very likely" through "unlikely" are generally well known by staff. The likelihood rating "remote" is often not well known by staff.

C. Guidance for Consequence Ratings

Severity	Health Description	Property Damage Description
Minor	**Slight or No Health Effect -** No health effect or one requiring first aid or no treatment	**Slight or No Damage -** Slight or no damage to property up to $500
Moderate	**Moderate health effects -** Minor injury or health effects: Medical treatment beyond first aid that typically results in lost time of 2 days or less Examples: • Cut on the hand that requires stitches • Prescription medication • Broken leg that requires hard cast but allows person to return to work before missing more than two days	**Minor property damage -** Minor damage: Costs between $500 and $10,000 Example: • Brief disruption of operation or activity
Serious	**Major health effects -** Major injury or health effects: Injuries or health effects affecting work performance resulting in loss of time at work of 3 days or greater, an overnight hospital stay or irreversible damage to health. Examples: • Any lost time injury or illness resulting in 3 days or more away from work) • Overnight hospitalization • Illnesses such as sensitization, noise induced hearing loss, chronic back injury, repetitive strain injury or stress.	**Local property damage -** Moderate damage: Costs between $10,000 and $100,000 Example: • Partial shutdown of installation or cessation of part of the activity for a while

Severity	Health Description	Property Damage Description
Catastrophic	**Fatality** – any work-related fatality	**Major property damage** - Major damage: Costs more than $100,000 Example: • Shutdown of installation for up to 2 weeks or cessation of the whole activity for up to 2 weeks

D. Guidance for Probability Ratings

Probability	Description
Remote	The chances of an incident resulting from an activity is virtually zero. This may be appropriate for a person sitting in a chair and reading a report. The chances of an incident are virtually impossible. OC San will have very few of these levels of likelihood for our activities.
Unlikely	While there is a chance of an incident with this activity, it is not likely to happen. For example, a person walking on a clear, clean sidewalk, could fall, but it is unlikely to happen. Think about the number of people that walk every day without falling on a clear, clean sidewalk. OC San will have a significant number of these types of hazards.
Likely	An incident will probably happen. A person working on a ladder that is not set up appropriately will likely fall, but not always. There is a good chance. OC San will have a significant number of these.
Very Likely	An incident will happen. A person that enters an uncontrolled confined space with toxic gases or vapors will almost certainly become sick or die. Nearly all the activities performed by OC San that are considered high hazard like confined space entry, working at heights, working in an excavation, etc., will all be rated with an "Almost certain to happen" in an uncontrolled situation.

E. Hierarchy of Risk Controls

1. Risk control is commensurate with the level of risk. The focus of H&S risk(s) control is primarily on measures to prevent hazardous situations. The hierarchy of controls should be used when determining the appropriate control.

2. The hierarchy of risk controls is a list, in preferential order, of how H&S risks can be controlled:
   a. **Elimination** - always look to eliminate the hazard if possible.
   b. **Substitution** – replace the hazard with a less hazardous tool, process, chemical, etc.
   c. **Isolation** – isolate the hazard or those who could be harmed so the hazard is not accessible.
   d. **Engineering Controls** - provide an engineering solution to lessen the hazard.

e. **Administrative Controls** - provide training, shorten exposure times, rotate staff, encourage staff behavioral changes, provide signage or warnings to administratively reduce the hazard.

f. **Personal Protective Equipment (PPE)** - use of PPE should be considered a last resort control method, but often used as secondary controls. PPE should not be the first line of defense unless all other controls are not practical, feasible, or it is mandated by local regulatory requirements.

3. The hierarchy of controls should always be considered when assessing the effectiveness of controls. The higher in the hierarchy, the more effective the control usually is. Elimination of the hazard is always the preferred control. When this is not possible, a control lower in the hierarchy can be considered. This process is repeated until the proper and practical control is selected for each hazard.

F. Control of Low Risks

1. Risks classified as “Low” can be controlled in a simple manner by reference to specific generic procedures and personal competencies. The basis for control of H&S risks at this level is judgment and experience. For example, walking down the sidewalk often only requires a simple administrative control, situational awareness to assure the person scan the surface for hazards and avoids those hazards that could cause the person to trip or slip and fall.

2. Examples of General H&S control standards or measures for Low H&S risks:

a. Newly recruited staff receives basic training in safety aspects in their area of work as part of their education for the job.

b. Training on the job by experienced supervisor or peer.

c. Refer to SOPs and JHAs for the tasks.

d. Good housekeeping practices

e. Tailgate meetings before a new activity is being carried out.

f. Reading/understanding of and training in company safety standards.

g. Understanding of vendor specification for use of equipment.

3. For each of these requirements, standards or measures it must be indicated who is responsible for keeping them up to date and who is responsible for their application.

4. H&S documents the minimum training requirements and standards and measures applied to control H&S risks.

5. Low risk categories shall be controlled within six months of assessment.

G. Control of Medium Risks

1. Risks classified as “Medium” are controlled in a more rigorous yet simple way. A main point is that more risk specific information and control measures are provided and documented in, for example, a JHA or JSSA. The basis for control of H&S risks at this level is appropriate hazard analysis and risk control in addition to judgment and experience.

2. In addition, controls can include such things as:
    a. Specialized training
    b. Contingency/Emergency planning
    c. Engineering controls
    d. Administrative controls
    e. Personal protective equipment
    f. Specialized equipment (i.e., air monitoring, fall protection, ventilation)
    g. Housekeeping
    h. Inspections
3. In many cases it may be appropriate to use a combination of these tools to control medium risks.
4. Medium risk categories shall be controlled within three months of assessment.

H. Control of High Risks

1. Risks classified as “High” must be thoroughly analyzed and controlled. The principles of the analysis and control of high risks are identical to medium risks but more detailed and with more risk control and recovery measures.
2. High risks are brought to the attention of H&S support staff and their analysis is carried out by competent staff with support by subject matter experts, and Risk Management professionals.
3. High risk categories shall be controlled within one month of assessment.

I. Lastly, always put health and safety first in all things:

1. Correct or report safety concerns.
2. Suggest ways to improve health and safety and/or eliminate unsafe conditions.
3. Monitor health and safety controls for effectiveness.
4. Look out for yourself and others.
5. Continually be aware of your surroundings and when things change or you have a concern, and
6. Stop work if it is not safe.

VI. Job Safety Analysis

A. A job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each

basic step of the job is to identify potential hazards and to recommend the safest way to do the job.

B. Factors to be considered in setting a priority for analysis of jobs include:

1. Accident frequency and severity: jobs where accidents occur frequently or where they occur infrequently but result in serious injuries.

2. Potential for severe injuries or illnesses: the consequences of an accident, hazardous condition, or exposure to harmful products are potentially severe.

3. Newly established jobs: due to lack of experience in these jobs, hazards may not be evident or anticipated.

4. Modified jobs: new hazards may be associated with changes in job procedures.

5. Infrequently performed jobs: workers may be at greater risk when undertaking non-routine jobs, and a JSA provides a means of reviewing hazards.

C. Hazards are identified and assessed using the HARC tool.

D. JSAs are electronically stored in OC San's Incident Management Software, Cority.

VII. Pre-Use Analysis

A. General

1. Pre-use analysis is a tool to assist in identifying, analyzing, and mitigating hazards associated with capital improvement and maintenance projects. Pre-use analysis is used across the design phases of a project.

2. A pre-use analysis is to be performed prior to the introduction, change or installation of new materials, chemicals, process, or equipment.

3. The purpose is to provide guidance for a systematic approach to the review of projects and processes, using recognized and generally accepted good engineering practices to identify, and then minimize or eliminate hazards.

4. Any process, material or equipment which has not previously been installed or used at OC San needs a thorough evaluation as to need, safety of operation/maintenance, accessibility, possibility of accidental release, emergency equipment or measures required, alternatives, controls, etc.

5. Any process, material or equipment which has previously been installed or used at OC San needs to be reviewed with Operations and Maintenance to evaluate possible problem areas, such as safety of operation/maintenance and human factor considerations (e.g., accessibility of controls and switches, ease of operation, ease of reading instrumentation, need for emergency equipment or measures, etc.).

6. A copy of the completed analysis will be maintained with the project files.

7. The pre-use analysis procedure identifies specific hazards for various categories. The RAM provided herein is to be used to assess the risk level associated with each hazard. These values are to be listed on the tables within the analysis.

B. Process

1. The project engineer will assemble a team consisting of appropriate personnel from Engineering, Operations, Maintenance, Risk Management, and any additional support staff.
    a. Preliminary Design: Pre-use analysis will be completed during the facilities planning or preliminary design phase to set safety expectations and design criteria. The review will consider if applicable, among other things:
        1) Alternative processes, chemicals, equipment, or technologies.
        2) Provisions of safety controls, with appropriate redundancy.
        3) Provisions for fall protection, ventilation, suitable walking working surfaces, etc.
        4) Provisions for site security and emergency access/egress roadways.
        5) Record all discussions, findings, and decisions of this meeting through meeting minutes and design document reviews.
    b. Detailed Design: Pre-use analysis will continue as the design progresses from Preliminary Design Review (PDR) to Design Stage Three (DS3). Items considered in this phase of the process will include, if applicable:
        1) A complete review of all items considered under PDR.
        2) Identification of specific hazards and mitigation measures implemented. This includes identifying specification sections used in the Contract Documents during the construction of the facility.
        3) Discuss the potential for hazardous atmosphere and ventilation system.
        4) Discuss the facility controls and operation including safety equipment procedures and access to remote equipment.
        5) New provisions for property protection, access for emergency personnel, and elaborate on site security discussed in PDR.
        6) Any other considerations that may come out of the team discussions.
        7) Record all discussions, findings, and decisions of this meeting through meeting minutes and design document reviews.
2. It is important that the Operations and Maintenance staff that do the actual hands-on work be included in this review. The review shall, at a minimum, address the following:

a. Any breakdowns that have occurred, including the rationale (if known), and the remedies applied.

b. Any releases that have occurred, including the rationale (if known) and remedies applied.

c. Any injuries that have occurred, including the root cause and rationale, and modifications made to prevent future such incidents.

d. Any difficulties in operation or maintenance because of location, available space, accessibility, durability, accuracy, etc.

e. How would an operator or maintenance staff member have changed the design to make it more convenient, or safer?

f. Any site-specific issues or problems.

g. Any proposed changes shall be documented using the existing Management of Change procedure.

h. All items discussed and observations made shall be recorded in minutes.

VIII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

IX. References

Injury and Illness Prevention Program

California Code of Regulation Title 8 Section 3203 – Injury and Illness Prevention Program

X. Revision History

Version	Date	By	Reason
1.0	11/02/2020	Frattali, John	New
2.0	09/24/2021	Hachim, Sabrina	Annual Program Review – Refer to Change Program Log

XI. Attachments

Attachment A – HARC Listing Table

ATTACHMENT

ATTACHMENT A – HARC LISTING TABLE

HARC

The mitigated and unmitigated ratings for the hazards presented are based on the Risk Assessment Matrix below. Modify hazards and ratings as necessary to meet the task or project needs.

Risk Assessment Matrix				
	Severity of Harm			
Probability	Minor	Moderate	Serious	Catastrophic
Remote	Low	Low	Low	Low
Unlikely	Low	Low	Medium	Medium
Likely	Low	Medium	High	High
Very Likely	Medium	High	High	High

HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):

Biological	M	Chemical	H	Driving	M	Electrical	M
Environmental	H	Gravity	M	Mechanical	H	Motion	M
Personal Safety	L	Pressure	M	Radiation	L	Sound	L

Hazard #1 **BIOLOGICAL**

Insects, spiders, wastewater pathogens, coyotes, animal feces, etc.

		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	MEDIUM	Job Briefing/Site Awareness
Mitigated Risk:	LOW	PPE
Comments:	Pest control throughout plant and around facilities.	

Hazard #2 **ENVIRONMENTAL**

Oxygen deficiency/enrichment, hydrogen sulfide, methane, carbon dioxide

		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	HIGH	Engineering Controls (ventilation)
Mitigated Risk:	MEDIUM	Adminstrative Controls (monitoring, alarams)
Comments:	PPE where hazard cannot be reduced.	

Hazard #3 **PERSONAL SAFETY**

Personal safety - injury from violence, violence, disgrunteled public or employee

		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	LOW	Job Briefing/Site Awareness
Mitigated Risk:	LOW	Training
Comments:	Security force to mitigiate events and protect OCSD assest.	

Hazard #4 **CHEMICAL**

Process chemicals to treat wastewater; laboratory; shop

		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	HIGH	Engineering Controls (ventilation, barriers)
Mitigated Risk:	MEDIUM	PPE/Training
Comments:	Systems to be cleaned and flushed and isolated if worked on.	

Hazard #5 **GRAVITY**

None

		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	MEDIUM	Job Briefing/Site Awareness
Mitigated Risk:	LOW	Training
Comments:	Critical lift plans; inspections	

Hazard #6	**PRESSURE**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (barriers)
Mitigated Risk:	LOW	Traning/Labeling
Comments:		
Hazard #7	**DRIVING**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	MEDIUM	Training
Mitigated Risk:	LOW	Job Briefing/Site Awareness
Comments:	Obeying traffic laws, spotters, inspections	
Hazard #8	**MECHANICAL**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	HIGH	Engineering Controls (guards, barriers, etc.)
Mitigated Risk:	LOW	Job Briefing/Site Awareness
Comments:	LOTO to render equipment safe.	
Hazard #9	**RADIATION**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	LOW	Job Briefing/Site Awareness
Mitigated Risk:	LOW	Training
Comments:	Signage; leak testing; phase out of radioactive sources	
Hazard #10	**ELECTRICAL**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (enclosures, cabinet types, calcs)
Mitigated Risk:	LOW	PPE
Comments:	Training, Job Briefing/Site Awareness, Labeling, LOTO	
Hazard #11	**MOTION**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (guarding, barriers, etc.)
Mitigated Risk:	LOW	Job Briefing/Site Awareness
Comments:	Training	
Hazard #12	**SOUND**	
None		
		To mitigate this hazard, use the following:
Overall Unmitigated Risk:	LOW	Engineering Controls (enclosures)
Mitigated Risk:	LOW	PPE
Comments:	Training	

ORANGE COUNTY SANITATION DISTRICT	SOP-646 (Ver. 2) Out of Service Equipment
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager 	

I. Purpose

This procedure establishes the standard work practices for identifying, marking and managing out of service equipment. This procedure was developed to prevent unauthorized use or access to such equipment or areas that are not part of a lock-out/tag-out.

This procedure was established to control equipment that is out of service for extended periods of time, tagged out for operational needs, or for equipment that will be abandoned or removed soon.

II. Definitions

Abandoned Equipment: This is any equipment that has been permanently removed from operational service. This equipment will be demolished as part of a future project. This equipment is not expected to be returned to its original operational use.

Energy-Isolating Device (EID): A device that physically prevents the transmission or release of energy. An EID is capable of being locked out if it has a built-in locking mechanism, or has a means of attachment to which, or through which, a locking mechanism can be affixed.

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or gravity energy; including residual or stored energy of any type.

HASP: a steel lockout HASP that accepts up to 6 padlocks, allowing multiple locks to be applied on the same lockout point.

Idled Equipment: Any equipment that has been taken out of service for an undetermined length of time. This equipment is expected to be returned to operational service at some future time. Idled equipment may be serviced or maintained by District staff or Contractors, but only if the requirements of the District's SAFETY-SOP-605 Control of Hazardous Energy Program are administered and maintained.

Tagout Device: A prominent warning device that is fastened at an energy-isolation device to warn employees not to energize the equipment.

III. Procedure

A. Abandoned Equipment

1. The operating/owning department shall ensure that equipment to be abandoned-in-place has been properly shut down in accordance with this standard, as well as operations and maintenance manuals/SOPs.

2. At a minimum an Out of Service tag needs to be placed on abandoned equipment. Installation of locks with a tagout device is optional. Installation and removal are restricted to the operating/owning department that applied the tag, or lock and tagout equipment.

3. Liquids, solids and/or chemicals shall be drained, flushed or otherwise cleaned from tanks and piping to the greatest extent possible. The equipment and piping must be appropriately vented where needed.

4. Electrical feeds shall be physically disconnected and separated from the affected equipment where deemed appropriate.

5. Attempts should be made to physically separate upstream and downstream piping. Physical separation may include removal of pipe sections or valves and installation of plugs, caps, blind flanges, etc. Controls shall be placed in the off or safe position.

6. Energy control procedures developed under the Control of Hazardous Energy Program (SOP-605) can be used to facilitate the out of service isolation, including the placement of locks and tags.

7. Opening or closing of electrical circuits must be performed in accordance with the Electrical Safety Program (SOP-205).

8. Each operating/owning department is responsible for securing the equipment to ensure that all energy sources have been isolated and that energy sources are dissipated.
    a. In addition to isolating equipment from normal electrical power sources, additional precautions may be necessary to isolate the process, utility feed, emergency electrical, and/or discharge lines to properly secure the equipment.
    b. Care must be taken to ensure that residual or stored energy sources (for example: springs, elevated moveable components, rotating wheels, hydraulic and pneumatic systems) are reduced to their zero mechanical/energy level.

9. The operating/owning department responsible for securing the equipment will try to activate the operational switches to verify the circuit and equipment are de-energized and in a safe position.

10. The operating/owning department responsible for securing the equipment will place Out of Service lock and tags on the equipment energy isolating devices. Out of Service locks and tags must comply with Section III(C) of this procedure.

B. Idled Equipment

1. At a minimum, the operating/owning department shall de-energize idled equipment. The operating/owning department shall determine if other isolations are required (i.e. closing influent gate, open drain valve). Opening or closing of electrical circuits must be performed in accordance with the Electrical Safety Program (SOP-205).

2. At a minimum an Out of Service tag needs to be placed on idled equipment. Installation of locks with a tagout device is optional. Installation and removal are restricted to the operating/owning department that applied the tag, or lock and tagout equipment.

3. The operating/owning department responsible for securing the equipment will place Out of Service lock or tags on the equipment energy isolating devices. Out of Service locks and tags must comply with Section III(C) of this procedure. Locks will only be placed on equipment as deemed necessary by the operating/owning department.

4. If servicing and maintenance activities are performed on idled equipment, the requirements of the Control of Hazardous Energy Program (SOP-605) must also be implemented and maintained. Out of Service locks and tags do not replace the requirement for locks and tags and energy isolation devices required by SOP-605. Out of Service locks and tags shall be applied directly at the energy-isolating device. To allow for placement of both the Out of Service locks and tags and LOTO locks and tags on an energy-isolating device, a HASP can be used at the energy-isolating device.

5. Before the idled equipment is returned to service, the following shall be performed by the operating/owning department:
    a. Ensure that machine or equipment components are operationally intact, including guards and covers.
    b. All employees have been safely positioned or removed from the work area.
    c. Verify that all operating controls are in the safe position.
    d. Servicing and maintenance work, if applicable, is complete and that all LOTO locks and tags have been removed.
    e. Opening or closing of electrical circuits must be performed in accordance with the Electrical Safety Program (SOP-205).

C. Out of Service Tags or Locks with Tags

1. Out of Service locks shall be different from those used for Control of Hazardous Energy.

2. Where servicing or maintenance is performed on idled equipment, the Control of Hazardous Energy program shall be implemented and maintained.

3. Cable tie wraps shall be used to secure the tags to equipment or affixed directly onto the lock.

4. Out of Service tags shall be provided with employee name, division number, date, and a statement as to why equipment is not to be operated.

5. The Out of Service tags or locks must only be removed by the person/department responsible for placing the tags or locks.

6. Special instructions covering operation of equipment is to be noted on reverse side of the tag.

7. Tags or Locks are to be removed as soon as the special conditions relating to their use no longer apply.

8. Master keys for out of service locks will be provided to the operating/owning department supervisor or manager.

IV. Training

Personnel who are assigned responsibility for placing equipment in or out of service must understand the requirements of this procedure prior to starting any tasks associated with out of service equipment and must be able to distinguish between equipment that needs to be placed out of service and equipment that required maintenance which falls under LO/TO.

Contractors whose work activities may involve or be affected by an out of service of equipment/process will be informed of this procedure on a case-by-case basis. If applicable, each contractor is responsible to train their employees in the application of this procedure to their assigned work.

V. Recordkeeping

All records created or generated in the course of this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of District records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VI. Revision History

Version	Date	By	Reason
1.0	11/02/2020	Frattali, John	New
2.0	12/13/2021	Hachim, Sabrina	Annual Program Review – Refer to Program Change Log

ORANGE COUNTY SANITATION DISTRICT	SOP-647 (Ver. 2) Ladder Safety Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: 11/02/2020
Approved By: James D. Herberg General Manager	

I. Purpose

The purpose of the Ladder Safety Program is to establish the minimum requirements for Orange County Sanitation District (OC San) employees regarding the proper selection, care, and use of portable ladders (including stepladders, extension ladders, and articulating ladders). This program also addresses fixed ladders to ensure safety under normal conditions of use. This program does not cover scaffolds or elevated work platforms which are covered by other separate programs.

OC San employees may be required to operate ladders as part of their job duties. To minimize risks to people and property OC San restricts the operation of all ladders to those persons who have been properly trained.

II. Background

The main hazard associated with the use of ladders is falls. Falls occur for several reasons, including but not limited to the following:

- The ladder is in poor condition or is the improper type or size for the task at hand.
- The ladder is poorly located and/or incorrectly positioned.
- The surface on which the ladder is located is slippery or uneven.
- Proper techniques are not observed when using the ladder.

The Ladder Safety Program applies to all OC San employees as well as to others such as contractors while using ladders on any OC San property. The intent of this program is to control ladder hazards by ensuring the following:

- Ladders are maintained and operated according to manufacturer's recommendations.
- Responsible persons are trained.
- Safe work practices and safety regulations are followed.
- Portable ladders are inspected for general ladder safety.

This program must be understood and complied with by all persons charged with the responsibility of operating, servicing, inspecting, and managing fixed and portable ladders, and related equipment on OC San's behalf.

III. Definitions

Cage – a guard that may be referred to as a cage or basket guard which is an enclosure that is fastened to the side rails of a fixed ladder or the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder.

Cleat - a ladder crosspiece of rectangular cross section placed on edge upon which a person may step while ascending or descending a ladder.

Extension Ladder - A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

Fixed Ladder - A ladder permanently attached to a structure, building, or equipment.

Job-made Ladder - a ladder that is fabricated by employees, typically at the construction site, and is not commercially manufactured. This definition does not apply to any individual rung/step ladders.

Ladder – An appliance usually consisting of two side rails joined at regular intervals by cross-pieces called steps, rungs, or cleats, on which a person may step in ascending or descending.

Ladder Gate – a climb preventive shield or cover installed on a fixed ladder to control access to tanks or other high structures.

Ladder Safety System – A device, other than a cage or well, designed to eliminate or reduce the possibility of falls from ladders. A ladder safety system usually consists of a carrier (the track of flexible cable or rigid rail), safety sleeve (moving component which travels on the carrier), lanyard, connectors, and body belt or harness (formerly called a ladder safety device).

Maximum Intended Load - the total load of all employees, equipment, tools, materials, transmitted loads, and other loads anticipated to be applied to a ladder component at any one time.

Pitch – the included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

Platform Ladder – a self-supporting portable ladder that is non-adjustable in length, with a platform provided at the highest intended standing level. The top platform is surrounded on three sides by a railing that is at least 20 inches higher than the platform surface.

Point of Access - all areas used by employees for work related passage from one area or level to another. Such open areas include doorways, passageways, stairway openings, studded walls, and various other permanent or temporary openings used for such travel.

Rungs – Ladder cross-pieces of circular or oval cross-section on which a person may step in ascending or descending.

Stepladder – a self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

Trestle Ladder – a self-supporting portable ladder, nonadjustable in length, consisting of two sections hinged at the top to form equal angles with the base. The size is designated by the length of the side rails measured along the front edge.

IV. Responsibilities

A. Risk Management

1. Review the Ladder Safety Program on an annual basis and revise it as necessary.
2. Provide ladder safety training to affected personnel.
3. Provide technical support to employees and divisions using ladders.
4. Verify inspections are conducted.
5. Maintain training records.

B. Supervisors

1. Provide the proper type, rated, and ANSI-compliant ladders for employees to use based on the task.
2. Evaluate the effectiveness of the program as it applies to their employees and provide Risk Management with their conclusions and recommendations.
3. Ensure the proper safety equipment is supplied to their affected employees where needed.
4. Ensure that employees attend all required training.
5. Ensure designated employees perform documented portable ladder inspections.

C. Employees

1. Comply with this program and ensure that all ladders used are OSHA and ANSI-compliance.
2. Properly select, use, handle, and store ladders in accordance with the instructions and training received.
3. Thoroughly inspect and maintain ladders before and after use. Ladder inspections are to be documented. A ladder inspection tag that can be affixed to the ladder is available through the Warehouse.
4. Notify their supervisor when they are not physically able to use a ladder or when questions arise regarding the safe use of a ladder, such as defective equipment,

needed accessories, or any other difficulties complying with the requirements of this program.

5. Report any hazards observed, which could compromise personal safety or the safety of others to their supervisor immediately.

6. Complete ladder safety training.

D. Contractors

1. Contractors shall be responsible for bringing and using their own portable ladders on OC San premises.

2. Contractors shall not use damaged or defective ladders.

3. Contractors shall inspect fixed ladders prior to use. Any defects or damage shall be reported to OC San.

V. General Ladder Safety

A. Ensure all ladders are constructed and used in accordance with Cal/OSHA regulations and ANSI standards, and all commercially manufactured ladders have a label indicating it meets the requirements of the ANSI standard. The label must be legible.

B. Visually inspect portable ladders before use and following any incident (i.e., dropped ladder). Ensure that any faulty ladders are decommissioned and taken out of service.

C. Maintain ladders free of oil, grease, and other slipping hazards.

D. Before climbing a ladder, muddy or slippery work boots shall be cleaned. Replace greasy or dirt-laden gloves.

E. Do not carry tools or equipment in your hands when climbing a ladder. Carry tools on a work belt, in a shoulder bag, backpack, or use a hand line to raise or lower equipment.

F. Do not load ladders beyond their maximum intended load nor beyond their manufacturers rated capacity.

G. Use ladders only for their designated purpose.

H. Use ladders only on stable and level surfaces unless secured to prevent accidental movement. Do not use ladders on slippery surfaces unless secured or provided with slip-resistant feet to prevent additional movement.

I. Secure ladders placed in areas such as passageways, doorways, or where they can be displaced by workplace activities or traffic to prevent additional movement.,

J. Only one person at a time is allowed on single-width ladder, including portable and fixed ladders, unless otherwise indicated by the manufacturer.

K. Face the ladder when moving up or down.

L. Maintain 3 points of contact (two hands and a foot, or two feet and a hand) when ascending or descending (climbing) the ladder. Keep your body between the side rails. When climbing the ladder, the user shall face the ladder and maintain a firm hold on the ladder. It is preferable to grasp the rungs with an overhand grip as opposed to grabbing the rails. Grip strength is improved while grasping the rungs.

M. Never connect short ladders to form a longer ladder.

N. Use ladders only for their intended purpose (i.e., do not use as scaffolding, etc.)

O. Where possible, straight ladders should be secured with a rope or wire at the top and blocked at the bottom.

P. Do not over-reach, jump or slide a ladder while on it. Generally, always keep your belt buckle between the rails when on a ladder. Never put one foot on the ladder and the other on an adjacent surface. Ladders shall not be moved, shifted, or extended while occupied.

Q. Barricades and warning signs should be posted when ladders are placed near doors or other locations where they could be struck.

R. The area around the top and bottom of the ladder shall be always kept clear.

S. The ladder shall be kept close to the work.

T. The user shall not overreach and shall descend and relocate the ladder instead.

U. When using a ladder, the user shall never push or pull unless the ladder is properly secured.

V. Belt buckle area of the body should remain centered on the ladder and never extend beyond the side rails. If the user reaches outside the side rails, fall protection is required.

W. Users are cautioned to take proper safety measures when ladders are used in areas containing electrical circuits. These precautions should prevent any contact or possible contact with an energized, uninsulated circuit or conductor to avoid electrical shock or short circuit.

X. Users must maintain safe distance from overhead powerlines and energized circuits.

VI. Portable Ladders

A. General Requirements

1. Only use ladders for their intended purpose and not for platforms or as walk-boards.

2. Select the correct type of portable ladder by considering the duty rating, ladder type and height required to safely complete the job task. The five ladder types and their duty ratings are as follows:

   a. Type IAA – Extra Heavy Duty, 375-pound load capacity

b. Type IA – Extra Heavy Duty, 300-pound load capacity
c. Type I – Heavy Duty (Industrial), 250-pound load capacity
d. Type II – Medium Duty (Commercial), 225-pound load capacity
e. Type III – Light Duty (Household), 200-pound load capacity

3. Rungs and steps are corrugated, knurled, dimpled, coated with skid resistant material, or otherwise treated to minimize the possibility of slipping.

4. Remove damaged ladders from service and tag as “Dangerous, Do Not Use”, or with other similar language, until the repairs are made. Note: Ladders that cannot be repaired must be withdrawn from service and destroyed in such a manner as to render it useless.

5. Ensure portable ladders are equipped with non-slip bases or safety feet.

6. Place ladders on a stable, slip-resistant surface.

7. Do not place ladders on boxes, barrels, or other unstable bases or splice ladders together to obtain additional height.

8. Block open, lock or otherwise guard doorways that open towards a ladder.

9. Use barricades or cones and signage when ladders must be set-up in high traffic areas, such as hallways or stairwells.

10. Never attempt to move, shift, or extend a ladder while standing or climbing on it. Set-up ladders close to the work area and do not over-reach.

11. To maintain balance, do not climb higher than the second step from the top cap on a stepladder or the third rung from the top on a straight ladder.

12. Do not use the rear of a stepladder for climbing or standing. These are designed solely for increasing stability.

13. When accessing an upper landing surface, such as a roof or entry point into a confined space, ensure the side rails of non-self-supporting ladders extend at least three (3) feet above the upper landing, eave, or edge.

14. Ensure that the top of a non-self-supporting ladder is placed with the two rails supported unless it is equipped with a single support attachment. Such an attachment is designed to provide greater stability.

15. When setting up an extension ladder, follow the 4 to 1 rule: place the base of the ladder one foot away from the supporting wall, for every four feet in height the ladder is extended.

16. When transporting ladders on vehicles or equipment equipped with ladder racks, ensure the ladders are properly supported. The support points should be constructed of material that will minimize the effects of vibration, chafing and road shock. If a ladder extends out three (3) feet beyond the end of the vehicle, a red flag must be attached to the end of it.

17. Wood and metal portable ladders are prohibited unless Risk Management has evaluated and provided exception to such use.

B. Stepladders

1. The spreader assembly is a required component of all stepladders and must be fully opened and locked before use. Never climb a folded stepladder.

2. Stepladders cannot exceed twenty (20) feet in height.

3. Do not use the top cap of a stepladder as a step or permit a plank to be placed on the top step.

4. Portable ladders are designed to support one person along with all necessary equipment (tools, materials, etc.).

C. Platform Ladders

1. Platform Ladders range in size from two (2) feet to eighteen (18) feet in length as measured from the bottom along the side rail to the top of the platform.

2. The top platform is surrounded on three sides by a railing that is at least 42 inches higher than the platform surface. A folding Bucket (Pail) Shelf may also be provided.

3. Ensure that the platform ladder is on level ground before use, such that all four of its side rails are supported.

4. Never use a platform ladder as a single ladder or in the partially open position.

D. Single Ladders and Extension Ladders

1. Individual sections of extension ladders cannot exceed thirty (30) feet in length.

2. Two-section extension ladders cannot exceed forty-eight (48) feet in length. Extension ladders with more than two-sections cannot exceed sixty (60) feet in length.

3. When a person is climbing an extension ladder at heights of twenty (20) feet or higher, ensure that a second person is present to steady the ladder’s base or that the top of the ladder is effectively secured to a sound anchor point.

4. On two-section extension ladders, ensure that the minimum overlap for the two sections is in accordance with the manufacturer’s recommendations.

E. Mobile Ladder Stands

1. Use mobile ladder stands and platforms on level surfaces.

2. When provided, use the handrails while ascending or descending the mobile ladder.

3. Always face the mobile ladder while ascending or descending, except when the slope of the steps is 50 degrees or less above the horizontal.

4. Never move a mobile ladder stand while standing on climbing on it.

5. Do not store materials and/or equipment on the steps or platform.

6. Maintain mobile ladder stands in good condition and ensure exposed surfaces do not develop sharp edges, burrs, or other safety hazards, such as corrosion or deterioration.

7. Never exceed the maximum work-level height of a mobile ladder stand, which is calculated as four (4) times the minimum or least base dimension. Where the least base dimension requirement is not met, either install suitable outrigger frames or make provisions to guy or brace the unit against tipping.

8. Never use boxes, ladders, or other objects on a platform, or sit or stand on the guard rails to increase the working height.

VII. Fixed Ladders

A. General Requirements

1. Know the basic minimum design requirements for fixed ladders:
   a. Ladders, at a minimum, must support a single concentrated load of two hundred (200) pounds. If necessary, they should be painted or treated to prevent rust and deterioration depending on their location.
   b. The distance between rungs, cleats and steps must not exceed twelve (12) inches and must be uniform throughout the length of the ladder.
   c. The clear length of rungs must be sixteen (16) inches.
   d. The rungs of an individual-rung ladder must be designed so that an employee's foot cannot slide off the end.
   e. Rungs are at least three quarter (3/4) inch diameter on metal ladders
   f. The side rails of through or side-step ladder extensions must extend three and a half (3.5) feet above parapets and landings.
   g. The preferred pitch of fixed ladders is in the range of 75° and 90° with the horizontal.
   h. Substandard pitch is in the range of 60° and 75° with the horizontal and is only permitted where it is necessary to meet the conditions of installation.
   i. Ladders having a pitch more than 90° with the horizontal are prohibited.
   j. There must be a clear width of 15 inches on each side of the center line of the ladder unless the ladder is equipped with a cage or well.
   k. Fixed ladders must have cages if they are longer than 20 feet. Landing platforms must be provided on ladders greater than 20 feet long. A platform is required every 30 feet for caged ladders and every 20 feet for unprotected ladders.
   l. There must be at least a 7-inch clearance behind the ladder to provide adequate toe space.
   m. No more than one person at a time is allowed on each section of the ladder.

2. Maintain ladders in safe condition and perform fixed ladder inspections regularly, with the interval between inspections determined by use and exposure.

3. When a defect is not repairable, ensure the ladder is tagged as “out of service”.

B. Cages and Wells

1. Ensure cages or wells are provided on ladders of more than twenty (20) feet to a maximum unbroken length of thirty (30) feet, except where suitable sliding fall protection devices are installed:
   a. Cages must extend a minimum of forty-two (42) inches above the top of landing unless other acceptable protection is provided.
   b. Cages must extend down the ladder to a point not less than seven (7) feet nor more than eight (8) feet above the base of the ladder, with bottom flared not less than four (4) inches, or portion of cage opposite ladder shall be carried to the base.

2. There should be no projections inside the cage or well.

3. Ladder safety devices may be used on tower, water tank, and chimney ladders over twenty (20) feet in unbroken length in lieu of cage protection.

C. Platform Landings

1. When ladders are used over twenty (20) feet in height, ensure that landing platforms are provided for each thirty (30) feet of height:
   a. If no cage, well, or ladder safety device is provided, a landing platform must be provided for each twenty (20) feet of height.
   b. Each ladder section must be offset from adjacent sections.
   c. Where an offset is required, a landing platform must be provided.
   d. Landing platforms cannot be less than twenty-four (24) inches in width by thirty (30) inches in length.

2. Where a person must step a distance greater than twelve (12) inches from the centerline of the rung of a ladder to the nearest edge of structure or equipment, ensure that a landing platform is provided with a minimum step-across distance of two and a half (2.5) inches.

3. Ensure all landing platforms are equipped with standard railings and toe boards.

D. Ladder Safety Systems

1. All ladder safety systems, such as those that incorporate lifebelts, friction brakes, and sliding attachments, must meet the design requirements of the ladders which they serve.

2. Ladder safety systems are required on fixed ladders 24 feet or more in height.

3. Do not allow the connection between the carrier or lifeline and the point of attachment to the body belt or harness to exceed nine (9) inches in length.

4. Ensure all ladder safety systems and related support systems on fixed ladders conform to the following:
    a. All safety devices must be able to withstand, without failure, a drop test consisting of a five hundred (500) pound weight dropping eighteen (18) inches.
    b. All safety devices must permit the worker to ascend or descend without continually having to hold, push or pull any part of the system, leaving both hands free for climbing.
    c. All safety devices must be activated within two (2) feet after a fall occurs and limit the descending velocity of an employee to seven (7) feet per second or less.
5. Follow all requirements for mounting ladder safety systems on fixed ladders:
    a. Mountings for rigid carriers must be attached at each end of the carrier, with intermediate mountings spaced along the entire length of the carrier, to provide the necessary strength to stop workers' falls.
    b. Mountings for flexible carriers must be attached at each end of the carrier.
    c. Design and installation of mountings and cable guides must not reduce the strength of the ladder. Installation shall be in accordance with manufacturer recommendations and instructions.

VIII. Maintenance Requirements

A. Only trained and qualified persons can make repairs to ladders.

B. Ladder repairs must restore the ladder to a condition meeting the manufacturer's original design criteria before the ladder is returned to service.

C. Follow ladder manufacturer instructions for lubrication of mechanical parts, such as metal bearings of locks, wheels, and pulleys.

1. For articulated ladders, lubricate the hinges upon receipt and then annually or more frequently, depending upon use.

D. Ensure all welding is performed in accordance with the "Code for Welding in Building Construction" (AWSD1.0-1966).

E. Ensure metal ladders and appurtenances are painted or otherwise treated to resist corrosion and rusting, when location demands.

F. Refer to manufacturer instructions for cleaning.

G. Do not store ladders in direct sunlight, extreme temperatures or in damp environments.

H. Store non-self-supporting ladders horizontally and ensure wall supports or brackets are provided at 4 to 6-foot intervals to prevent sagging.

I. Store self-supporting ladders vertically in the closed position.

J. Proper ladder maintenance ensures the safe condition of the ladder. Hardware, fittings, and accessories should be checked frequently and kept in proper working condition. All

pivoting connections and the rung-lock cam surfaces should be lubricated frequently. All bolts and rivets shall be in place and secure before using a ladder, and no ladders shall be used if any bolts or rivets are missing or if the joints between the steps (or rungs) and the side rails are not tight. Ladders with safety shoes or padded feet which are excessively worn shall be taken out of service until repaired.

IX. Inspections

A. Ensure that ladder inspections are conducted, as specified in this document, and that a record of the inspection is maintained either on a ladder inspection tag.

1. Adhesive ladder inspection tags shall be affixed to the side rail of the extension ladder and A-frame ladder.

2. Mobile staircase ladder inspection tags shall be affixed using a zip tie or cable tie to a support member of the ladder.

3. Never permanently affix (e.g., rivets, screws, etc.) a ladder inspection tag or reference number to the ladder, unless it is approved by the manufacturer. Modifications to a ladder without the manufacturer's approval may compromise the integrity such that the ladder no longer meets specification.

B. Portable extension ladders and A-frame ladders shall have a documented inspection at least every month. Users shall informally inspect prior to each use. The monthly inspections shall be documented on OC SAN ladder inspection labels, which can be found in the Warehouse (item No. 806151).

C. Mobile staircase ladders shall have a documented inspection at least every quarter, unless noted otherwise by the manufacturer. Inspection tags can be obtained from Risk Management.

D. Fixed ladders shall be visually inspected prior to each use. When conducting fixed ladder inspections, ensure that:

1. Ladders are secured to the structure or object to which they are attached.

2. All splices and connections have smooth transitions with the original members and have no sharp or extensive projections.

3. Side rails (used as climbing aids), rungs, cleats and steps are free of splinters, sharp edges, and burrs.

E. Employees should conduct inspections for general ladder safety for all portable ladder types by checking the following:

1. Ladders should not have any damage, lack of structural integrity, missing components, or loose parts. The steps or rungs must be tight and secure to the side rails.

2. The safety feet or other auxiliary equipment (such as ropes) are kept in good condition.

3. The stepping surfaces are free of oil, grease, or other slippery substances.
4. Movable parts must be tested to see that they operate without binding or without too much free play.
5. All labels should be intact and readable.
6. Ladders shall be free of oil, grease, or slippery materials.
7. A ladder that has been exposed to fire or strong chemicals should be discarded.
8. All accessories such as leg levelers, paint shelves, stand-off shelves, etc. are in good condition.
9. The ladder base shall be placed on a secure and level footing. When necessary, ladder levelers shall be used to achieve equal rail support on uneven surfaces.
10. The ladder base must have the slip resistant material.
11. While inspecting extension ladders, you need to make sure that:
    a. Ropes and pulleys are in good condition.
    b. Ladder extension locks move freely and lock correctly
    c. Rung locks are on the rails of the top section to ensure the top section will not fall.
    d. Extension guide brackets are secure and in place
12. Fiberglass or plastic ladders should be inspected for the following elements as well:
    a. cracks, chips, and splinters
    b. deformed rails or rungs from heat, chemical or environmental exposure
    c. bends and breaks

X. Selection

A. The following shall be considered when selecting a ladder:

1. Long or tall enough to provide access to the work area without having the employees stand on the top 2 steps of a step ladder or the top 3 rungs of a straight ladder.
2. Consider the ladder rating and the maximum intended load-carrying capacity of the ladder for the task.
3. Type of ladder necessary (extension, step ladder, etc.).
4. The height which needs to be achieved.
5. Material the ladder is made of.

XI. Fall Protection

A. Refer to OC San SOP-626 Fall Protection for additional information regarding protecting employees from fall hazards.

B. Fixed ladders: fall protection must be provided for employees climbing or working on fixed ladders above 24 feet.

C. Portable ladders: fall protection is not required for employees climbing or working on portable ladders provided all safety rules (such as maintaining three points of contact) can be observed while performing work.

XII. Training

A. All employees that utilize ladders must participate in the “Ladder Safety Training Program” and shall receive online Ladder Safety Training.

B. The training program is developed to ensure each employee can recognize hazards related to the selection, use, handling, and environmental surroundings affecting the safe use of ladders.

C. Employees will receive information on the proper procedures and work practices to minimize these hazards.

D. The program is designed to train each employee in the following areas, as applicable:

1. The nature of fall hazards in the work area.

2. The correct procedures for selecting, erecting, using, and maintaining ladders and their associated equipment including disassembly of fall protection systems, if applicable.

3. The proper construction, use, placement, and care in handling of ladders.

4. Retraining will be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with this section.

XIII. Recordkeeping

All records created or generated during this procedure shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC SAN Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of OC SAN records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

XIV. References

Title 8, California Code of Regulations, Section 3276, Portable Ladders

Subject: **Ladder Safety Program**

Title 8, California Code of Regulations, Section 3277, Fixed Ladders

Title 8, California Code of Regulations, Section 3278, Use of Fixed Ladders

XV. Revision History

Version	Date	By	Reason
1.0	09/11/2020	Frattali, John	New
2.0	09/17/2021	Spencer, Case	Periodic Update – Refer to Program Change Log

OC SAN ORANGE COUNTY SANITATION DISTRICT	SOP-648 (Ver. 1) Wildfire Smoke Exposure Management Program
Standard Operating Procedure (SOP)	Effective: 1/25/2022 Supersedes: New
Approved By: James D. Herberg General Manager 	

I. Purpose

The program provides guidelines to protect the Orange County Sanitation District (OC San) employees from exposure to wildfire smoke related health hazards and to ensure that the OC San complies with 8 CCR §5141.1 Protection from Wildfire Smoke.

II. Background

Smoke from wildfires contains gases, chemicals, and fine particles that can cause adverse health effects. The most significant hazard comes from breathing fine particles in the air, which can cause coughing, wheezing, difficulty breathing, and impact lung function as well as existing respiratory and heart conditions. Fine particulate matter of the 2.5 micrometer diameter or smaller size (PM 2.5) are the most harmful of the particulates.

The California Division of Occupational Safety and Health (Cal/OSHA) has established regulatory requirements for employers to protect outdoor workers from wildfire smoke exposure in 8 CCR §5141.1 Protection from Wildfire Smoke.

III. Applicability

This program applies to OC San employees who may need to work outdoors for an extended period where the Air Quality Index (AQI) for PM 2.5 is 151 or greater or where it is reasonable to anticipate that employees may be exposed to wildfire smoke. This program and 8 CCR §5141.1 Protection from Wildfire Smoke do not apply to:

- Employees working in enclosed buildings or structures in which the air is filtered by a mechanical ventilation system and the employer ensures that windows, doors, bays, and other openings are kept closed to minimize contamination by outdoor or unfiltered air.
- Employees working in enclosed vehicles in which the air is filtered by a cabin air filter and the employer ensures that windows, doors, and other openings are kept closed to minimize contamination by outdoor or unfiltered air.
- Areas where the employer can demonstrate that the concentration of PM 2.5 in the air does not exceed a concentration that corresponds to a current AQI of 151 or greater by measuring PM 2.5 levels at the worksite in accordance with Appendix A of 8 CCR §5141.1.

- Employees exposed to a current AQI for PM 2.5 of 151 or greater for a total of one hour or less during a shift.

IV. Definitions

Current Air Quality Index (Current AQI). The method used by the U.S. Environmental Protection Agency (U.S. EPA) to report air quality on a real-time basis. Current AQI is also referred to as the "NowCast," and represents data collected over time periods of varying length to reflect present conditions as accurately as possible.

The current AQI is divided into six categories as shown in the table below, adapted from Table 2 of Title 40 Code of Federal Regulations, Part 58, Appendix G.

Air Quality Index (AQI)	
Categories for PM2.5	***Levels of Health Concern***
0 to 50	Good
51 to 100	Moderate
101 to 150	Unhealthy for Sensitive Groups
151 to 200	Unhealthy
201 to 300	Very Unhealthy
301 to 500	Hazardous

NIOSH. The National Institute for Occupational Safety and Health of the U.S. Centers for Disease Control and Prevention. NIOSH tests and approves respirators for use in the workplace.

PM2.5. Solid particles and liquid droplets suspended in air, known as particulate matter, with an aerodynamic diameter of 2.5 micrometers or smaller.

Wildfire Smoke. Emissions from fires in "wildlands," as defined in Title 8, section 3402, or in adjacent developed areas.

V. Responsibilities

A. Risk Management shall:

1. Maintain the written Wildfire Smoke Exposure Management Program and update the program at least annually.

2. Provide training for employees who perform work activities outdoors during or after wildfires when smoke is present.

3. Determine employee exposure to PM2.5 before each shift and periodically thereafter, as needed to protect the health of the employee, by any of the following methods:

a. Check AQI forecasts and the current AQI for PM2.5 from any of the following sites: U.S. EPA AirNow website, U.S. Forest Service Wildland Air Quality Response Program website, California Air Resources Board website, local air pollution control district website, or local air quality management district website; or

b. Obtain AQI forecasts and the current AQI for PM2.5 directly from the EPA, California Air Resources Board, local air pollution control district, or local air quality management district by telephone, email, text, or other effective method; or

c. Measure PM 2.5 levels at the worksite before each shift and at designated intervals during wildfire events.

4. Provide updated information to management regarding AQI forecasts and the current AQI for PM2.5.

B. Managers and Supervisors of employees who perform work activities outdoors during or after wildfires when smoke is present shall:

1. Ensure that their employees are trained on this Wildfire Smoke Exposure Management Program.

2. Ensure that their employees have access to respiratory protection supplies (i.e.- N95s) and are wearing respirators when the AQI is >500.

3. To the extent feasible, encourage and allow employees to work in enclosed structures or vehicles where the air is filtered.

4. Implement the following control systems for employees that must work outdoors during a wildfire:

a. Inform employees of the current AQI for PM2.5 and protective measures available to employees to reduce their wildfire smoke exposures.

b. Encourage employees to inform the employer of worsening air quality; and any adverse symptoms that may be the result of wildfire smoke exposure such as asthma attacks, difficulty breathing, and chest pain.

c. Reduce employee exposure to PM 2.5 to less than a current AQI of 151 by means of engineering controls whenever feasible for instance by providing enclosed buildings, structures, or vehicles where the air is filtered. If engineering controls are not sufficient to reduce exposure to PM2.5 to less than a current AQI of 151, then the employer shall reduce employee exposures as much as feasible.

d. Whenever engineering controls are not feasible or do not reduce employee exposures to PM2.5 to less than a current AQI of 151, the employer shall implement administrative controls, if practicable, such as relocating work to a location where the current AQI for PM2.5 is lower, changing work schedules, reducing work intensity (to help lower the breathing and heart rates) or by providing additional rest periods.

e. Where the current AQI for PM2.5 is equal to or greater than 151, but does not exceed 500, the employer shall provide respirators to all employees for voluntary use in accordance with OC San Respiratory Protection Program (SOP-109) and encourage employees to use respirators. Respirators shall be NIOSH-approved devices that effectively protect the wearers from inhalation of PM2.5, such as N95

filtering facepiece respirators. Respirators shall be cleaned, stored, maintained, and replaced so that they do not present a health hazard to users. Employers shall use Appendix B for training regarding voluntary use of respirators.

f. Notify Risk Management if their employees inform them that the air quality is getting worse or if they are suffering from any symptoms due to the air quality.

C. Employees working outdoors during a wildfire shall:

1. Understand and follow the requirements of this Wildfire Smoke Exposure Management Program, including participating in training.

2. Wear respirators when required to do so (i.e.- AQI is >500). (Note: surgical masks, scarves, T-shirts, bandanas etc. are not allowed to be used in place of a NIOSH approved respirator).

3. Inform their supervisor if the air quality is getting worse.

4. Inform their supervisor if they are suffering from any symptoms due to the air quality.

5. Remain in enclosed structures or vehicles where the air is filtered, as much as possible during a wildfire unless instructed to evacuate.

6. Seek medical attention if they are suffering from any symptoms due to the air quality. These symptoms include hoarse voice, difficulty breathing, shortness of breath, prolonged coughing spells, a raised heartbeat, tiredness, headache, or mental confusion. Employees have a right to do this without fear of reprisal. Depending on the severity of the symptoms, contact 911 or Company Doctor.

VI. Wildfire Smoke Exposure Control Plan

A. Exposure Monitoring

1. Risk Management will monitor AQI information available via the U.S. Environmental Protection Agency (EPA), South Coast Air Quality Management District (SCAQMD), or the U.S. Forest Service Wildland Air Quality Response Program to determine employees' potential exposure to PM 2.5 while working outdoors during a wildfire. See *Appendix A* for additional information on how to access these AQI resources; or

2. Risk Management may also use a direct-reading particulate monitor (TSI SidePak Aerosol Monitor AM520) to determine PM 2.5 levels at the worksite. Risk Management's SidePak AM520 is annually calibrated by the manufacturer and prior to use. Risk Management may also hire a consultant to collect readings.

B. Communication of Air Quality and Protective Measures

1. Risk Management is responsible for informing management about air quality and protective measures. Communication methods can include emails, text alerts, and/or OC San website updates.

2. Employees are encouraged to notify their supervisors of worsening air quality and any adverse symptoms they may be experiencing due to smoke exposure. Supervisors must then relay this information to Risk Management for follow-up.

3. In the event cell phone service is unavailable, if an employee has reason to suspect they are being exposed to elevated levels of wildfire smoke, they must evacuate the area until a determination can be made that it is safe to work at that location.

C. Exposure Control Methods

1. The primary method of controlling exposure to wildfire smoke at OC San is Engineering Controls. Acceptable Engineering Controls include enclosed buildings, structures, or vehicles where the air is filtered.

2. Whenever Engineering Controls are not feasible or do not reduce employee exposure to PM 2.5 to less than an AQI of 151, OC San will implement Administrative Controls. Acceptable Administrative Controls include relocating workers to a location where the AQI is lower, changing work schedules, reducing work intensity, or increasing the duration and frequency of rest times, in areas of filtered air. The decision on which administrative controls to apply in each situation will be decided on a case-by-case basis.

D. Control by Respiratory Protective Equipment

1. The AQI will determine whether respirator use is voluntary or required for employees that must work outdoors during a wildfire.

   a. AQI of 151-500 (Voluntary Use)

      1) N95 Filtering Facepiece Respirators will be provided to employees working outdoors to wear on a voluntary basis.

      2) N95s are available at the warehouse.

      3) Refer to Appendix B – Using Disposable Respirators for additional information on proper use and care of N95s.

      4) Dispose of N95 immediately if damaged, soiled/wet, or it becomes difficult to breathe through the mask.

      5) Do not reuse N95s, put on a new N95 at the start of each work shift.

      6) If you have trouble breathing, dizziness, or nausea while wearing the N95, go to an area with cleaner air to remove the mask and seek medical attention.

   b. AQI of >500 (Required Use)

      1) Use must follow SOP-109. Meaning, the respirator user must be:

         a) Medically cleared for tight-fitting respirator use (if an employee is not medically cleared to use a respirator, administrative controls to the extent necessary to protect the employee must be applied instead).

b) Trained on using a tight-fitting respirator; and

c) Fit-Tested for the specific tight-fitting respirator they will be using.

2. Risk Management will provide NIOSH certified respirators with the appropriate protection factor (i.e. - half-face or full-face respirators based on the AQI) to medically cleared, trained, and fit-tested respirator users

E. Training

1. Computer based training is available on Cornerstone for employees who may need to work outdoors for an extended period during a wildfire. Contact Risk Management regarding training needs or issues.

2. Risk Management can also provide in-person training for OC San employees. To schedule in-person training, contact Risk Management.

3. In accordance with Appendix B of 8 CCR §5141.1, this training will include, at a minimum, the following topics:
   a. The health effects of wildfire smoke.
   b. The right to obtain medical treatment without fear of reprisal.
   c. How employees can obtain the current Air Quality Index (AQI) for PM2.5.
   d. The requirements in Title 8, section 5141.1 about wildfire smoke.
   e. The employer's two-way communication system.
   f. The employer's methods to protect employees from wildfire smoke.
   g. The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke.
   h. How to properly put on, use, and maintain the respirators provided by the employer.

VII. Recordkeeping

All records created or generated while implementing this program shall be legible and stored in a way that they are readily retrievable in facilities or electronic document/content management systems that provide a suitable environment to prevent damage, deterioration, or loss. Records may be in the form of any type of media, such as hard copy or electronic media. The OC San Records Retention Schedule is the official procedure governing the retention, retirement, and destruction of the OC San records. Document owners should use these schedules to determine the item and series that best fit their records. Document owners are responsible for ensuring that documents are properly marked, indexed, and filed for their projects or area of responsibility.

VIII. References

SOP-600, Injury and Illness Prevention Program

Title 8, CCR §5141.1. *Protection from Wildfire Smoke*

IX. Revision History

Version	Date	By	Reason
1.0	12/13/2021	Spencer, Case	New – Refer to Program Change Log regarding comments for third party review

X. Appendices

Air Quality Index Resources

Wildfire Smoke Training

Appendix A (Air Quality Index Resources)

In the event of a wildfire, the OC San Risk Management Office of Emergency Management and/or Public Affairs Office will provide Air Quality Index (AQI) information to OC San employees. However, individuals can also monitor the AQI by visiting one of the following websites:

- United States Environmental Protection Agency: https://www.airnow.gov/
- South Coast Air Quality Management District: https://www.aqmd.gov/
- U.S. Forest Service Wildland Air Quality Response Program: https://wildlandfiresmoke.net

Appendix B – Protection from Wildfire Smoke Information to Be Provided to Employees

A. The health effects of wildfire smoke.

Although there are many hazardous chemicals in wildfire smoke, the main harmful pollutant for people who are not very close to the fire is “particulate matter,” the tiny particles suspended in the air. Particulate matter can irritate the lungs and cause persistent coughing, phlegm, wheezing, or difficulty breathing. Particulate matter can also cause more serious problems, such as reduced lung function, bronchitis, worsening of asthma, heart failure, and early death. People over 65 and people who already have heart and lung problems are the most likely to suffer from serious health effects. The smallest, and usually the most harmful, particulate matter is called PM2.5 because it has a diameter of 2.5 micrometers or smaller.

B. The right to obtain medical treatment without fear of reprisal.

Employers shall allow employees who show signs of injury or illness due to wildfire smoke exposure to seek medical treatment and may not punish affected employees for seeking such treatment. Employers shall also have effective provisions made in advance for prompt medical treatment of employees in the event of serious injury or illness caused by wildfire smoke exposure. Employees must seek medical attention if they are suffering from any symptoms due to the air quality. These symptoms include hoarse voice, difficulty breathing, shortness of breath, prolonged coughing spells, a raised heartbeat, tiredness, headache, or mental confusion. Depending on the severity of the symptoms, contact 911 or Company Doctor.

C. How employees can obtain the current Air Quality Index (AQI) for PM2.5.

Various government agencies monitor the air at locations throughout California and report the current AQI for those places. The AQI is a measurement of how polluted the air is. An AQI over 100 is unhealthy for sensitive people and an AQI over 150 is unhealthy for everyone.

Although there are AQIs for several pollutants, Title 8, section 5141.1 about wildfire smoke only uses the AQI for PM2.5.

The easiest way to find the current and forecasted AQI for PM2.5 is to go to www.AirNow.gov and enter the zip code of the location where you will be working. The current AQI is also available from the U.S. Forest Service at https://tools.airfire.org/ or a local air district, which can be located at www.arb.ca.gov/capcoa/dismap.htm. Employees who do not have access to the internet can contact their employer for the current AQI. The EPA website www.enviroflash.info can transmit daily and forecasted AQIs by text or email for cities or zip codes.

D. The requirements in Title 8, Section 5141.1 about wildfire smoke.

If employees may be exposed to wildfire smoke, then the employer is required to find out the current AQI applicable to the worksite. If the current AQI for PM2.5 is 151 or more, the employer is required to:

- Check the current AQI before and periodically during each shift.
- Provide training to employees.
- Lower employee exposures.

- Provide respirators and encourage their use.

E. The employer's two-way communication system.

Employers shall alert employees when the air quality is harmful and what protective measures are available to employees.

Employers shall encourage employees to inform their employers if they notice the air quality is getting worse, or if they are suffering from any symptoms due to the air quality, without fear of reprisal.

The employer's communication system is:

- Risk Management is responsible for informing management about air quality, protective measures. Communication methods can include emails, text alerts, and/or OC San website updates.
- Employees are encouraged to notify their supervisors of worsening air quality and any adverse symptoms they may be experiencing due to smoke exposure. Supervisors must then relay this information to Risk Management for follow-up.

F. The employer's methods to protect employees from wildfire smoke.

Employers shall take action to protect employees from PM2.5 when the current AQI for PM2.5 is 151 or greater. Examples of protective methods include:

- Locating work in enclosed structures or vehicles where the air is filtered.
- Changing procedures such as moving workers to a place with a lower current AQI for PM2.5.
- Reducing work time in areas with unfiltered air.
- Increasing rest time and frequency and providing a rest area with filtered air.
- Reducing the physical intensity of the work to help lower the breathing and heart rates.

The employer's control system at this worksite is:

The primary method of controlling exposure to wildfire smoke at the OC San is Engineering Controls. Acceptable Engineering Controls include enclosed buildings, structures, or vehicles where the air is filtered.

Whenever Engineering Controls are not feasible or do not reduce employee exposure to PM 2.5 to less than an AQI of 151, OC San will implement Administrative Controls. Acceptable Administrative Controls include relocating workers to a location where the AQI is lower, changing work schedules, reducing work intensity, or increasing the duration and frequency of rest times in areas of filtered air.

The OC San will also provide N95 respirators for use if administrative controls are infeasible.

G. The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke.

Respirators can be an effective way to protect employee health by reducing exposure to wildfire smoke when they are properly selected and worn. Respirator use can be beneficial even when the AQI for PM2.5 is less than 151, to provide additional protection.

When the current AQI for PM2.5 is 151 or greater, employers shall provide their workers with proper respirators for voluntary use. If the current AQI is greater than 500, respirator use is required.

A respirator should be used properly and kept clean.

The following precautions shall be taken:

- Employers shall select respirators certified for protection against the specific air contaminants at the workplace. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Center for Disease Control and Prevention certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will list what the respirator is designed for (particulates, for example).
- Surgical masks or items worn over the nose and mouth such as scarves, T-shirts, and bandannas will not provide protection against wildfire smoke. An N95 filtering facepiece respirator, shown in the image below, is the minimum level of protection for wildfire smoke.
- Read and follow the manufacturer's instructions on the respirator's use, maintenance, cleaning, and care, along with any warnings regarding the respirator's limitations. The manufacturer's instructions for medical evaluations, fit testing, and shaving should also be followed, although doing so is not required by Title 8, section 5141.1 for voluntary use of filtering facepiece respirators.
- Do not wear respirators in areas where the air contains contaminants for which the respirator is not designed. A respirator designed to filter particles will not protect employees against gases or vapors, and it will not supply oxygen.
- Employees should keep track of their respirator so that they do not mistakenly use someone else's respirator.
- Employees who have a heart or lung problem should ask their doctor before using a respirator.

H. How to properly put on, use, and maintain the respirators provided by the employer.

To get the most protection from a respirator, there must be a tight seal around the face. A respirator will provide much less protection if facial hair interferes with the seal. Loose-fitting powered air purifying respirators may be worn by people with facial hair since they do not have seals that are affected by facial hair.

The proper way to put on a respirator depends on the type and model of the respirator.

For those who use an N95 or other filtering facepiece respirator mask that is made of filter material:

- Place the mask over the nose and under the chin, with one strap placed below the ears and one strap above.

- Pinch the metal part (if there is one) of the respirator over the top of the nose so it fits securely.

Image 1 within Appendix B to Section 5141.1. Protection from Wildfire Smoke Information to Be Provided to Employees (Mandatory)

For a respirator that relies on a tight seal to the face, check how well it seals to the face by following the manufacturer's instructions for user seal checks. Adjust the respirator if air leaks between the seal and the face. The more air leaks under the seal, the less protection the user receives.

Respirator filters should be replaced if they get damaged, deformed, dirty, or difficult to breathe through. Filtering facepiece respirators are disposable respirators that cannot be cleaned or disinfected. A best practice is to replace filtering facepiece respirators at the beginning of each shift.

If you have symptoms such as difficulty breathing, dizziness, or nausea, go to an area with cleaner air, take off the respirator, and get medical help.