OC SAN 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