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1.0 INTRODUCTION

1.1 Purpose

This procedure identifies controls and work practices to prevent exposure to respirable crystalline silica which can occur in settings such as abrasive/sand blasting operations and construction activities including concrete work.

Silica refers specifically to the compound silicon dioxide (SiO2). Silica is a major component of sand, rock, and mineral ores. Exposure to fine (respirable size) particles of crystalline forms of silica is associated with adverse health effects, such as silicosis, lung cancer, chronic obstructive pulmonary disease (COPD), and activation of latent tuberculosis infections.

1.2 Scope

This standard covers personnel within Los Angeles Refinery who are involved in work activities that can create the potential for respirable crystalline silica exposure.

2.0 REFERENCES

Applicable requirements in the latest revision of the Respiratory Protection Procedure, shall be considered an integral part of this Practice. Additional references are listed below. Short titles will be used herein when appropriate.

2.1 Procedures and Standards

- LAR Carson F/S 477, Insulation Handling Procedure
- LAR Carson F/S 960, Respiratory Protection
- LAR Wilmington SAF-024, PPE - Hazard Assessment for Physical and Chemical Hazards

2.2 Government Regulations

- Title 8, California Code of Regulations, 1532.3 Occupational Exposures to Respirable Crystalline Silica
- Title 29, Code of Federal Regulations, Section 1910.1053 Respirable Crystalline Silica Standard for General Industry.
- Title 29, Code of Federal Regulations, Section 1926.1153 Respirable Crystalline Silica Standard for Construction.

3.0 DEFINITIONS

The following additional definitions are applicable to this Standard.

Table 1 Definitions

Term	Description
Owner	Marathon Petroleum Corporation
Parent Document	The Specification, Practice, or Industry Standard used as the basis for the process being defined.
Action Level (AL)	The concentration of airborne respirable crystalline silica of 25 µg/m3, calculated as an 8-hour time-weighted average (TWA).
Competent Person	An individual capable of identifying existing and foreseeable respirable crystalline silica hazards in the work place and who has authorization to take prompt corrective meaures to eliminate or minimize them. The competent person must have the knowledge or ability necessary to fulfill the responsibilies set forth in this document.
Employee Exposure	The exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.
Objective Data	Information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to respirable crystalline silica

Table 1 Definitions

Term	Description
	associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.
Permissible Exposure Limit (PEL)	During a work day, no employee shall be exposed to airborne respirable crystalline silica in excess of an 8-hour time-weighted average concentration of 50 µg/m3, calculated as an 8-hour TWA.
Physician or other licensed health care professional [PLHCP]	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 of the particular health care services
Regulated Area	An area, demarcated by the employer, where an employee's exposure to airborne concentrations of respirable crystalline silica exceeds, or can reasonably be expected to exceed, the PEL.
Respirable Crystalline Silica	Quartz, cristobalite, and/or tridymite contained in airborne inhalable particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle-size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality – Particle Size Fraction Definitions for Health-Related Sampling.

4.0 RESPONSIBILITIES

4.1 Occupational Health Group

a. Communicate the health hazards associated with respirable crystalline silica, and establishing requirements for exposure control safe work practices and use of appropriate PPE.

b. Conduct personal exposure monitoring to assess personnel exposure during jobs where an exposure to airborne concentrations of respirable crystalline silica is, or can reasonably be expected to be, in excess of the PEL. This is to ensure proper work practice controls and respiratory protection is being worn during the job.

c. Serve as competent personnel who will make routine inspections of job sites, materials, and equipment used to minimize exposures to respirable crystalline silica.

d. Communicate exposure monitoring results to personnel and notify Medical Department of a monitoring result that triggers medical surveillance.

e. Obtain and verify contractor respirable crystalline silica exposure control plans and competent person designation.

4.2 Fire & Safety Department

a. Serve as competent personnel who will make routine inspections of job sites, materials, and equipment used to minimize exposure to respirable crystalline silica.

    a. These jobs can be identified via the Permit to Work process.

4.3 Maintenance

a. Review and evaluate job scopes to determine if new jobs may result in potential respirable crystalline silica exposure and notify the Occupational Health group if job scope may be an exposure concern.

b. Ensure work practice, engineering controls and personal protective equipment (PPE) identified by this procedure are followed through the Permit to Work process.

c. Designate a competent person who will make frequent and regular inspections of the job site, material and equipment and to implement the written exposure control plan through the Permit to Work Process.

4.4 Contractors

a. Ensure personnel performing work that may result in respirable silica exposure are qualified through the Andeavor contractor approval process to work with crystalline silica.

b. Responsible for compliance with regulatory requirements and communication to other contractors and Andeavor employees when their activity could potentially result in crystalline silica exposure.

c. Designate a competent person who will make frequent and regular inspections of the job site, material and equipment and to implement the written exposure control plan through the Permit to Work Process.

4.5 Medical Department

a. Responsible for implementing a medical surveillance program for employees who are required to use a respirator for 30 or more days per year for purposes of minimizing exposure to respirable crystalline silica.

5.0 PROCEDURE

5.1 Respirable Crystalline Silica-related Tasks

a. Crystalline silica is a component commonly found in concrete, refractory, and abrasive blasting grit media.

b. Respirable crystalline silica can be generated through any manual or mechanical disturbance or handling of these materials that may generate airborne crystalline silica.

c. Exposures to respirable crystalline silica occur when the following tools are used on concrete, brick, block, stone, mortar, and other materials that contain crystalline silica:

- Stationary masonry saws;
- Handheld power saws;
- Walk-behind saws;
- Drivable saws;
- Rig-mounted core saws or drills;
- Handheld and stand-mounted drills (including impact and rotary hammer drills);
- Dowel drilling rigs;
- Vehicle-mounted drilling rigs;
- Jackhammers and handheld powered chipping tools;
- Handheld grinders;
- Walk-behind milling machines and floor grinders;
- Drivable milling machines;
- Crushing machines; and
- Heavy equipment and utility vehicles when used to abrade or fracture silica-containing materials (such as hoeramming or rock ripping) or during demolition activities, and for tasks such as grading and excavating.

d. Exposures to respirable crystalline silica also occur during tunneling operations and during abrasive blasting when sand or other blasting agents containing crystalline silica are used, or when abrasive blasting is performed on substrates that contain crystalline silica, such as concrete.

e. Other tasks that may result in potential exposure include preventive maintenance activities, housekeeping activities such as sweeping, and internal vessel inspections on refractory-lined equipment such as heaters, kilns, etc.

5.2 Exceptions

- This procedure does not apply where employee exposures will remain below the Action Level as an 8-hour TWA. These tasks listed below are situations where exposures are not likely to present significant exposure to worker per OSHA Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for Construction.
- Performing certain tasks involving minimal exposure to respirable crystalline silica include:
    i. Pouring concrete footers, slab foundation, and foundation walls

ii. Removing concrete form work

iii. Drilling holes in concrete or masonry (if duration of exposure is 15 minutes or less)

5.3 Safe Work Practices

a. Maintenance, contractors, and other personnel affiliated with types of work that may potentially generate airborne respirable crystalline silica shall be trained in the identification, hazards, and safe work practices to minimize exposure to respirable crystalline silica exposure.

b. Employees engaged in the task include the equipment operator, helpers, or any employee responsible for completing the task.

c. See **Appendix A** for specific exposure control methods for equipment and tools.

d. Engineering Controls include:

- Wet methods - water or foam is applied at the point of dust generation to keep dust from getting into the air
- Local Exhaust Ventilation - remove dust by capturing it at or near the point where it is created
- Isolation - separate employees from the dust source by containing the dust via enclosure or isolating employees from the source

e. Work Practice Controls

- Routine preventive maintenance and daily inspection to ensure equipment functions appropriately
- Wetting down dust prior to sweeping
- Scheduling work at a time where no other employees are in the area

f. Housekeeping

- Do not dry brush or dry sweep unless methods such as wet sweeping and HEPA-filtered vacuuming are not feasible.
- Do not clean surfaces or clothing with compressed air, unless no other cleaning method is feasible.

5.4 Personal Protective Equipment (PPE) Requirements

a. General PPE

- **See Appendix B**

b. Respiratory protection is also required for all employees engaged in the task including the equipment operator, helpers, or any employee responsible for completing the task.

➢ FR disposable coveralls shall be worn over general FRC.

5.5 Decontamination

a. Perform basic decontamination of the area, equipment, and PPE with the use of a HEPA vacuum to remove dust. Do not use compressed air.

b. Properly dispose of contaminated disposable garments in an impermeable bag prior to leaving a job site during break, lunch, completion of task, or at the end of shift.

c. Wipe down respirators and other reusable PPE after use and store in an impermeable bag. Properly dispose of filters and disposable respirators.

d. Personal hygiene ensures that the dust on the face, body, and clothes is removed to minimize contamination while eating, drinking, or smoking, carrying dust to other parts of the unit, or taking it into your home.

- Do not store or consume food, beverages and tobacco products in areas that may result in dust contamination.
- Wash hands and face with soap and water or towelettes —wash before eating, smoking, drinking or applying cosmetics, and at the finish of the job.
- Shower—Shower on the job if necessary.

6.0 HEALTH AND SAFETY

6.1 Regulated Area

a. A "Regulated Area" shall be established wherever an employee's exposure to airborne concentrations of respirable crystalline silica is, or can reasonably be expected to be, in excess of the PEL.

   a. Example of such areas include mixing booths/enclosures, confined spaces such as heaters or refractory-lined vessels.

b. A Regulated Area shall span fifteen (15) feet around the work area.

c. Access to the "Regulated Area" will be limited to personnel authorized by the employer and required by work duties to be present in the regulated area. Regulated area will be barricaded and signs will be posted at all entrances to regulated areas with the following legend:

DANGER
RESPIRABLE CRYSTALLINE SILICA
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
WEAR RESPIRATORY PROTECTION IN THIS AREA
AUTHORIZED PERSONNEL ONLY

Figure 1 Regulated Area Warning Sign

6.2 Exposure Monitoring

The Occupational Health Group has conducted personal exposure monitoring to assess employee exposures to respirable crystalline silica to determine and verify proper PPE and respiratory protection. This objective historical air monitoring data has been used to accurately characterize employee exposures to respirable crystalline silica.

6.3 Medical Surveillance

a. Medical surveillance is offered to employees who are potentially exposed to respirable crystalline silica under the following conditions:

- Required to use a respirator 30 or more days per year under this regulation.
- Exposure exceeds the Action Level 30 or more days per year.
- ***No Marathon LAR employees currently meet this condition.***

b. An initial (baseline) medical examination within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of this section within the last three years.

- Initial exam will include:

  a. A medical and work history, with emphasis on: Past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;

  b. Physical examination with special emphasis on the respiratory system;

  c. A chest X-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film

(no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B Reader;

d. A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV_1) and FEV_1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH approved spirometry course;

e. Testing for latent tuberculosis infection; and other tests deemed appropriate

- Periodic exams

a. Medical exams including the previous procedures will be made at least every three years or more frequently if recommended by the PLHCP.

6.4 Training and Hazard Communication

LAR employees with potential exposure to respirable crystalline silica above the action level shall complete training by reviewing this procedure and completing computer-based training prior to accomplishing their assigned tasks. Personnel have access to SDS and labels for silica containing materials as required by CFR 1910.1200 OSHA Hazard Communication Standard.

a. This document identifies

- the health hazards associated with exposure,
- specific tasks that could result in exposure,
- specific measures that are implemented to protect employees from exposure,
- the identity of the compentent persons designated by the company,
- the purpose and description of the medical surveillance program.

Contractors with potential exposure to respirable crystalline silica above the action level shall complete training that meets the regulatory requirements set by Title 29, Code of Federal Regulations, Section 1926.1153. Contractors must provide a respirable crystalline silica exposure control plan and designated competent person as per task requirement and should be made readily available upon request.

6.5 Review and Auditing

a. The Occupational Health Group will review this procedure annually to update changes in regulations or work practices. As exposure monitoring is

conducted for the jobs where airborne respirable crystalline silica may be generated, this information will be incorporated into the procedure.

6.6 Recordkeeping and Reporting

6.6.1 Air Monitoring Data

Exposure measurement records taken to assess employee exposure to respirable crystalline silica shall include at least the following information:

- The date of measurement for each sample taken;
- The task monitored;
- Sampling and analytical methods used;
- Number, duration, and results of samples taken;
- Identity of the laboratory that performed the analysis;
- Type of personal protective equipment, such as respirators, worn by the employees monitored; and
- Name, employee identification number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

All analysis of crystalline silica samples collected by the Occupational Health Group are analyzed at an AIHA Accredited Laboratory in accordance with the requirement of the OSHA Silica Standard.

All exposure measurement records shall be kept for the duration of employment plus 30 years.

6.6.2 Objective Data

Objective Data records used to assess employee exposure to respirable crystalline silica shall include at least the following information:

- The crystalline silica-containing material in question;
- The source of the objective data;
- The testing protocol and results of testing;
- A description of the process, task, or activity on which the objective data were based; and
- Other data relevant to the process, task, activity

Exposure (air) monitoring data will be maintained by the Occupational Health Group.

- Training records will be maintained by the Learning & Development Department and affected Contractors for the current year plus ten years.

- Medical Surveillance records will be maintained by the Medical Department and affected Contractors. These records will be retained for duration of employment plus thirty years.

Appendix A: Specified Exposure Control Methods for Equipment and Tools

	Equipment/Task	Engineering & Work Practice
	Stationary masonry saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade.
	Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.
	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	For tasks performed outdoors only: Use saw equipped with commercially available dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collect must provide the air flow recommended by the tool manufacturer, or greater, and have a HEPA filtration system.
	Walk-behind saws	Use saw equipped with commercially available dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.

	Rig-mounted core saws or drills	Use saw equipped with commercially available dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.
	Handheld and stand-mounted drills (including impact and rotary hammer drills) *used greater than 15 minutes*	Use saw equipped with commercially available dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a HEPA filtration system. Use a HEPA-filtered vacuum when cleaning holes.
	Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close captured hood or chorus around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector. OR Operate from within an enclosed cab and use water for dust suppression on drill bit.
	Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. OR Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a HEPA filtration system.

	Handheld grinders for mortar removal (i.e., tuckpointing)	Use grinder equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instruction to minimize dust emission. Dust collector must provide 25 cfm or greater of airflow per inch of wheel diameter and have a HEPA filtration unit attached and a cyclonic pre-separator or filter-cleaning mechanism.
	Handheld grinder for uses other than mortar removal	For task performed outdoors only: Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface. Operate and maintain tool in accordance with manufacturer's instruction to minimize dust emissions. OR Use grinder equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instruction to minimize dust emissions. Dust collector must provide 25 cfm or greater of airflow per inch of wheel diameter and have a HEPA filtration unit attached and a cyclonic pre-separator or filter-cleaning mechanism.
	Heavy equipment and utility vehicles used to abrade or fracture silica- (e.g., hoe-ramming rock ripping) or used during demolition activities involving silica-containing materials	Operate equipment from within an enclosed cab. When employees outside the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.
	Heavy equipment and utility vehicles for task such as grading and excavating but not including; demolishing abrading or fracturing silica-containing materials	Apply water and/or dust suppressants as necessary to minimize dust emissions. OR When the equipment operator is the only employee engaged in the task, operate equipment from within the enclosed cab.

Appendix B: Minimum PPE Requirements for Silica-Containing Materials/Tasks

Open Air Tasks	Respirator	Work Practices and PPE Requirements
Tasks >15 minutes including: • Concrete or refractory mixing and handling • Personnel assisting equipment operator • Concrete or refractory disturbance including: sweeping, chipping, cutting, jackhammering, shoveling, removal/demo, install, etc.	1/2 Face APR w/ HEPA	• Minimize dust generation via use of dust reduction system such as local exhaust ventilation, tools equipped w/ dust collection system or vacuum • FR Disposable coveralls
Tasks within Enclosure/Booth/ Temporary Fab Area	**Respirator**	**Work Practices and PPE Requirements**
Tasks >15 minutes including: • Concrete or refractory mixing and handling • Personnel assisting equipment operator • Dry grit or sand abrasive blasting • Concrete or refractory disturbance including: sweeping, chipping, cutting, jackhammering, shoveling, removal/demo, install, etc.	Full Face APR w/ HEPA	• **Local exhaust ventilation system required for mixing longer than 1 shift** • Minimize dust generation via use of dust reduction system such as local exhaust ventilation, tools equipped w/ dust collection system or vacuum • Disposable coveralls • Hand/face washing/decon
Tasks within Confined Space	**Respirator**	**Work Practices and PPE Requirements**
Scaffold building or inspection in heaters or refractory-lined vessels when no other work is occurring	1/2 Face APR w/ HEPA	Disposable coveralls
Personnel working in same area during silica dust-generating activities	Don same level of PPE as required	Contact Health to assess work area to downgrade
Concrete or refractory disturbance including: sweeping, chipping, cutting, jackhammering, shoveling, removal/demo, install, etc.	Full face APR w/ HEPA	• Minimize dust generation via use of dust reduction system • Local Exhaust Ventilation • Disposable coveralls • Hand/face washing/decon
Dry grit abrasive blasting	Supplied Air Respirator	• Minimize dust generation via use of dust reduction system • Local Exhaust Ventilation • Disposable coveralls • Hand/face washing/decon • Double hearing protection