Chapter 28 Respirable Crystalline Silica Exposure Program

28.1 Purpose, Scope, and Policy

28.1.1 Purpose

COMPANYNAME has recognized a potential exposure to silica for its employees any time that they must perform work that generates respirable crystalline silica dust or when employees work in areas where respirable crystalline silica dust is present. The Company also recognizes that engineering controls, used when possible, are the best way to protect its employees from the hazards related to respirable crystalline silica.

28.1.2 Scope

This program relates to all exposures to respirable silica dust that employees may encounter in their work, including those created by employees of other companies.

28.1.3 Policy

The company will comply with the guidelines set forth in 29 CFR 1926.1153 by fully and properly implementing control measures listed in Table 1 (see appendix) or maintain levels at, or below the Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter (50 $\mu g/m^3$), calculated as an 8-hour time-weighted average (TWA). In the event that levels cannot be maintained at or below the PEL, or when Table 1 specifically identifies, employees will be required to wear the proper type of respiratory protection.

28.2 Roles & Responsibilities

28.2.1 Management

Ensure that employees exposed to silica are trained on the health hazards associated with silica, tasks that could result in exposure to silica, measures to reduce exposure from silica, the identity of the competent person and the medical surveillance program.

Ensure that each employee who uses a respirator due to silica exposure for thirty (30) or more days per year are included in the medical surveillance program.

Maintain an accurate record of exposure measurements (air monitoring), objective data and each employee covered by medical surveillance in accordance with 29 CFR 1910.1020 and this program.

28.2.1.1 Supervisors

Conduct frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan and make corrective measures when necessary. Supervisors are responsible for ensuring that the policies and procedures of the company are followed.

28.2.1.2 Safety Coordinator

The Safety Coordinator will ensure that tasks are evaluated for possible employee exposure to silica hazards and Written Exposure Control Plans are developed for tasks where employees are exposed to silica. The Safety Coordinator will ensure that Written Exposure Control Plans are evaluated for effectiveness at least annually and updated as necessary.

28.2.2 Employee

Know, understand, and adhere to the Written Exposure Control Plans for the silica producing task they are involved in. Follow the policies of the respiratory protection program when required to wear respirators. Each employee has the responsibility to follow the policy or procedure intended to control exposure to silica hazards.

28.3 Definitions

See Definitions Chapter at the end of the Safety and Health Manual.[xii]

28.3.1 Global Harmonization Labeling (example)

Product Identifier: Silica Sand, Ground Silica, and Fine Ground Silica

Signal word: **DANGER**

Hazard Statement(s): May cause cancer by inhalation.

Causes damage to lungs through prolonged or repeated exposure by inhalation.

Precautionary Statement(s): Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust.

Do not eat, drink, or smoke when using this product.

Wear protective gloves and safety glasses or goggles.

In case of inadequate ventilation wear respiratory protection.

Hazard Pictogram(s):

28.4 Hazards

Activities that can lead to exposure include but are not limited to:

- Chipping, hammering, and drilling
- Saw cutting and grinding
- Crushing, loading, and dumping rock and concrete
- Abrasive blasting using sand
- Abrasive blasting on concrete or stone surfaces
- Dry sweeping

Silica exposure can lead to the following health hazards:

- Silicosis
- Lung Cancer
- Tuberculosis
- Autoimmune Disease
- Kidney Disease
- Stomach and other cancers

28.5 Hazard Control Measures

28.5.1 Exposure Control Methods

Engineering controls, work practices and respiratory protection measures will be fully and properly implemented to minimize or eliminate exposure to respirable crystalline silica. Each employee that will be engaged in tasks that create, or have the potential to create, an exposure must utilize identified engineering controls, work practices and respiratory protection accordingly.

28.5.1.1 Specified Exposure Control Methods

OSHA has identified 18 common tasks performed in the construction industry that are known to produce respirable crystalline silica. OSHA has established the acceptable engineering controls, work practice controls and respiratory protection to follow when performing these 18 tasks, referred to as "Table 1: Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica".

Respirable crystalline silica exposure monitoring is not required when the specified exposure control methods in Table 1 are fully and properly implemented.

When implementing the specified exposure control methods in Table 1 visible airborne dust must be minimized by:

- means of exhaust for tasks performed indoors or in enclosed areas
- sufficient flow rates when using wet methods

Additionally, the following measures must be implemented when working in an enclosed cab or booth:

- maintained free of settled dust
- door seals and closing mechanisms work properly
- gaskets and seals must be in good condition and work properly
- positive pressure with continuous delivery of fresh air
- air intake with 95 percent efficient filter

- heating and cooling capabilities

When performing multiple tasks on Table 1 during a shift the corresponding respiratory protection will be required for the total duration of all tasks.

28.5.1.2 Alternative Exposure Control Methods

Exposure assessments will be conducted for alternative tasks that may expose employees to respirable crystalline silica at or above the AL. Alternative tasks include:

- Tasks that are not addressed in Table 1, or
- Tasks where the exposure control methods prescribed in Table 1 are not fully and properly implemented

Additionally, proper controls will be implemented to ensure employees are not exposed to respirable crystalline silica in excess of the PEL.

When following the alternative exposure control methods approach, OSHA allows two exposure assessment options; the performance option or the scheduled monitoring option.

28.5.1.2.1 Exposure Assessment – Performance Option

This option will assess the 8-hour TWA exposure for each employee based on a combination of air monitoring data or objective data that can accurately characterize employee exposures to respirable crystalline silica.

Objective data may consist of air monitoring data from industry surveys, calculations based on the composition of a substance, area sampling results and exposure mapping profile approaches, and historic data.

When using the performance option:

- exposure assessment will be conducted before work begins;
- exposures will be reassessed whenever a change in production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or higher exposures at or above the AL;
- exposures will be reassessed when it is believed that new or additional exposures at or above the AL have occurred;
- employee exposures will be accurately characterized; and
- the exposure assessment will reflect the exposures of employees on each shift, for each job classification, in each work area.

Each affected employee will be notified in writing of the assessment results within five (5) working days after completing the exposure assessment. The Exposure Assessment Notification Letter found in the appendix of this chapter will be used.

28.5.1.2.2 Exposure Assessment – Scheduled Monitoring Option

This option will assess the exposure through air monitoring to measure employee exposure at specific intervals determined by OSHAs standard. Air monitoring will be performed initially and as follows:

- If the employee exposure is determined to be identified below the Action Level (<25 $\mu g/m^3$), personal air monitoring will be discontinued.
- If the monitoring results are found to be at or above the Action Level, but less than the PEL (50 $\mu g/m^3$), personal air monitoring will be repeated every six (6) months.
- If the monitoring results are at or above the PEL, air monitoring will be repeated every three (3) months

If two (2) consecutive exposure monitoring results performed within six (6) months, but seven (7) or more days apart, drop below the Action Level, monitoring will be discontinued.

Whenever there is a change in production, process, control equipment or work practices, exposure monitoring for that task will be reassessed.

All samples taken will be evaluated by a laboratory that analyzes air samples for respirable crystalline silica in accordance with the procedures in 29 CFR 1926.1153 Appendix A.

Each affected employee will be notified in writing of the assessment results within five (5) working days after receiving laboratory results. If the exposure is above the PEL, affected employees will be notified in writing of

the corrective measure that will be taken. The Exposure Assessment Notification Letter found in the appendix of this chapter will be used.

Affected employees, or their designated representatives, will be notified and allowed to observe any air monitoring of employee exposure to respirable crystalline silica. If the process takes place in an area that requires protective clothing, it will be required and provided to those observing.

28.5.2 Methods of Compliance

Engineering and work practice controls will be put into place to reduce and maintain employee exposure below the PEL or to the lowest feasible level.

When all feasible engineering and work practice controls are in place and the exposure remains at or above the PEL, proper respiratory protection will be required and provided to protect from respirable crystalline silica hazards (see Respiratory Protection chapter).

When using wet methods in freezing temperatures, Propylene Glycol antifreeze may be added to the water to prevent freezing. Concentrations will vary based on the freezing point desired (See Manufacturer for specifics). One commercially available brand of antifreeze which contains Propylene Glycol is outlined below. It is sold under the following trade names:

Trade Name	Propylene Glycol % by Weight	Freeze Point
PEAK® -50 F RV & Marine Antifreeze	25-30	No Data Available
SIERRA® Concentrate Antifreeze & Coolant	94-96	No Data Available
SIERRA® Concentrate Antifreeze & Coolant	50	-26° F
SIERRA® Concentrate Antifreeze & Coolant	60	-54° F
SIERRA® Concentrate Antifreeze & Coolant	66	-76° F

Data related to concentrations and freeze points has been taken from the SDS and conversations with the manufacturer. Whichever antifreeze is used, its SDS should be consulted and strictly followed.

WARNING: Propylene Glycol is an "environmentally friendly" antifreeze typically used in marine and RV applications. It is "generally recognized as safe" by the FDA and is used in food additives, etc. This antifreeze is not to be confused with Ethylene Glycol which is the primary ingredient found in everyday automotive antifreeze. Ethylene Glycol is not to be used under any circumstances as it has negative health consequences.

Safety Data Sheets for products containing silica will be located in the SDS book. All employees will have access to these SDSs and be provided training in accordance with the Hazard Communication Program requirements.

28.5.2.1 Housekeeping

When performing housekeeping duties in locations where silica is present, dry sweeping, dry brushing or use of compressed air will not be allowed. Additionally, compressed air may not be used to clean clothing.

Contaminated surfaces must be cleaned by wet sweeping, wet wiping, or the use of a HEPA-filtered vacuum. In addition, tasks that produce slurry must be cleaned prior to drying.

28.5.2.2 Written Exposure Control Plan

Each task involving an exposure to respirable crystalline silica will be assessed. An exposure control plan will be developed for each task to include:

- Engineering controls that will be utilized;
- Work practice controls;
- Required respiratory protection;
- Housekeeping measures;
- Procedures to restrict access to work areas; and
- Procedures when exposures are generated by other employers.

The Written Exposure Control Plan will be evaluated for effectiveness on an annual basis and updated as needed. The Competent Person will make frequent and regular inspections of job sites, equipment, and materials to implement the Written Exposure Control Plan.

A template for the Written Exposure Control Plan is found in in the appendix of this chapter.

28.5.3 Medical Surveillance

To ensure the health of all exposed company employees, medical surveillance will be offered. Each employee that is required to use a respirator for protection from respirable crystalline silica exposure for thirty (30) days or more per year will undergo this evaluation. This medical surveillance will be provided at no cost to the employee and performed by a Physician or other Licensed Health Care Professional (PLHCP).

An initial examination will be conducted to establish a baseline medical exam within thirty (30) days of initial assignment, unless the employee has already received a medical exam that meets the requirements of this section within the last three (3) years. The medical exam is to include:

- Review of medical and work history emphasizing on past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system;
- Review of any history of respiratory system dysfunction;
- History of tuberculosis;
- Smoking status, past and present;
- Physical exam;
- Chest x-ray interpreted by a NIOSH-certified B reader;
- Pulmonary function test;
- Testing for latent tuberculosis infection; and
- Any other test deemed appropriate by the PLHCP.

Periodic medical examinations will be made available at least every three (3) years, or more frequently if recommended by the PLHCP.

Specific information will be communicated to the PLHCP for the medical surveillance. The form 'Information to Physician or other Licensed Health Care Professional' located in the appendix of this chapter identifies all of the required information. This information includes:

- A copy of the OSHA standard pertaining to respirable crystalline silica (29 CFR 1926.1153), including Appendix B;
- Description of employee's former, current, and anticipated duties related to respirable crystalline silica exposure;
- The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;
- A description of any PPE used, including when and duration of use; and
- Information from records of employment-related medical examinations previously provided to the employee by the Company.

COMPANYNAME will ensure that the PLHCP explains to the employee the results of the medical examination and provides each employee with a written medical report within thirty (30) days of the medical exam. The report shall contain:

- A statement indicating the results of the exam;
- Medical condition(s) that place the employee at an increased risk of exposure to respirable crystalline silica;
- Medical conditions that require further evaluation or treatment;
- Recommended limitations on the use of respirators;
- Recommended limitation on exposure to silica; and
- A statement that the employee may need further examination by a specialist based on the chest X-ray results.

A written medical opinion will be obtained from the PLHCP. Each employee will be provided with a copy within thirty (30) days of the exam. The written opinion will include:

- The date of the exam;

- A statement confirming that the exam met the requirements of the standard;
- Recommended limitations on the use of a respirator;
- Recommended limitation on exposure to silica (if employee provided written authorization); and
- A statement for the employee to be examined by a specialist based on the results of the chest X-ray (if employee provided written authorization).

If the PLHCP's written medical opinion indicates that the employee should be examined by a specialist, arrangements for a medical exam by a specialist will be made within thirty (30) days after receiving the written opinion. The specialist will be provided with the following information:

- A copy of the OSHA standard pertaining to respirable crystalline silica (29 CFR 1926.1153);
- Description of employee's former, current, and anticipated duties related to respirable crystalline silica exposure;
- The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;
- A description of any PPE used, including when and duration of use; and
- Information from records of employment-related medical examinations previously provided to the employee by the Company.

COMPANYNAME will ensure that the specialist explains the results of the medical exam to the employee and provides a written medical report within thirty (30) days of the medical exam. The written medical report will include:

- A statement indicating the results of the exam;
- Medical condition(s) that place the employee at an increased risk of exposure to respirable crystalline silica;
- Medical conditions that require further evaluation or treatment;
- Recommended limitations on the use of respirators;
- Recommended limitation on exposure to silica; and
- A statement that the employee may need further examination by a specialist based on the chest X-ray results.

A written opinion from the specialist will be obtained by the Company within 30 days of the medical examination. The written opinion must include:

- The date of the exam;
- A statement confirming that the exam met the requirements of the standard;
- Recommended limitations on the use of a respirator;
- Recommended limitation on exposure to silica (if employee provided written authorization); and
- A statement for the employee to be examined by a specialist based on the results of the chest X-ray (if employee provided written authorization).

28.5.4 Recordkeeping

28.5.4.1 Air Monitoring Data

Accurate records of all exposure measurements taken to assess employee exposure to respirable crystalline silica will be maintained for a minimum of thirty (30) years. These records will consist of:

- Dates of each sample taken;
- Tasks monitored;
- Sampling and analytical methods used;
- Number, duration, and results of samples;
- Identity of the laboratory that performed analysis;
- Type of PPE worn by the employees monitored; and
- Name, social security number, and job classification of all employees represented by the monitoring.

Records will be made available within fifteen (15) working days upon request at no cost to the employee.

28.5.4.2 Objective Data

Accurate records of all objective data relied upon to comply with the requirements set forth in the Alternate Exposure Control Methods section will be maintained for a minimum of thirty (30) years. These records will consist of:

- 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, material, or exposure on which the objective data were based.

Records will be made available within fifteen (15) working days upon request at no cost to the employee.

28.5.4.3 Medical Surveillance

Accurate records for each employee covered by the medical surveillance section will be maintained for the duration of employment plus thirty (30) years. These records shall include:

- Name and Social Security Number;
- A copy of the PLHCPs' and specialists' written medical opinions; and
- A copy of the information provided to the PLHCPs and specialists.

Records will be made available within fifteen (15) working days upon request at no cost to the employee.

28.6 Training

28.6.1 Initial

Every employee at the Company who faces risk of respirable crystalline silica exposure will be provided with training prior to initial assignment of silica related duties so that they will be able to demonstrate knowledge and understanding in:

- The health hazards associated with exposure to respirable crystalline silica, including cancer, lung effects, immune system effects, and kidney effects;
- The specific tasks that are performed by the Company that potentially result in exposure to respirable crystalline silica;
- The controls and measures that the Company has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respiratory protection to be utilized;
- The contents of the Silica Exposure Control Program;
- The identity of the Competent Person pertaining to the Silica Exposure Control Program designated by the Company; and
- The purpose and a description of the medical surveillance program required by the Silica Exposure Control Program.

Employees will be notified that the Company will make a copy of this program readily available, upon request.

In addition, employees will be properly trained in accordance to the Hazard Communication Program.

Upon successful completion of the Silica Exposure Control Program training, each participant receives a certificate, which they sign, verifying that they understand the material presented, and that they will follow all company policies and procedures regarding respirable crystalline silica exposure.

28.6.2 Refresher

Refresher training will be conducted if there is reason to believe that an employee has deviated from a previously trained upon plan or that their knowledge seems inadequate. These employees will be retrained and/or removed from operations that potentially result in exposure to respirable crystalline silica.

28.7 Reference

OSHA Standard 29 CFR 1926.1153, 1910.134, 1910.1020, 1910.1200 and 1926.57

28.8 Appendix

- Table 1: Specified Exposure Control Methods - Respirable Crystalline Silica
- Written Exposure Control Plan Form
- RCS Exposure Assessment Notification Letter – Over the Permissible Exposure Limit
- RCS Exposure Assessment Notification Letter – Under the Permissible Exposure Limit & Over the Action Level
- RCS Exposure Assessment Notification Letter – Under the Action Level
- Medical Surveillance Documentation
  - Information to Physician or other Licensed Health Care Professional
  - Written Medical Report for Employee
  - Written Medical Opinion for Employer
  - Authorization for Crystalline Silica Opinion to Employer

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS

For each employee engaged in a task identified on Table 1, the employer shall fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1, unless the employer assesses and limits the exposure of the employee to respirable crystalline silica in accordance with paragraph (d) of 29 CFR 1926.1153 (Alternative Exposure Control Methods).

Equipment/Task	Engineering & Work Practice Control Methods	Required Respiratory Protection & Minimum Assigned Protection Factor (APF)	
		≤4 hours/shift	>4 hours/shift
i. Stationary Masonry Saws	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.	None	None
ii. 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:		
	-When used outdoors.	None	APF 10
	-When used indoors or in an enclosed area.	APF 10	APF 10
iii. 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 collector must provide air flow recommended by the tool manufacturer, or greater, and have a filter with 99 percent or greater efficiency.	None	None
iv. Walk-Behind Saws	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:		
	- When used outdoors.	None	None
	- When used indoors or in an enclosed area.	APF 10	APF 10
v. Drivable Saws	For tasks performed outdoors only: 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.	None	None
vi. Rig-Mounted Core Saw or Drills	Use tool equipped with integrated water delivery system that supplies water to cutting surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None

Equipment/Task	Engineering & Work Practice Control Methods	Required Respiratory Protection & Minimum Assigned Protection Factor (APF) ≤4 hours/shift	>4 hours/shift
vii. Handheld & Stand-Mounted Drills (including impact & rotary hammer drills)	Use drill equipped with commercially available shroud or cowling with 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 filter with 99 percent or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.	None	None
viii. Dowel Drilling Rigs for Concrete	For tasks performed outdoors only: Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99 percent or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.	APF 10	APF 10
ix. Vehicle-Mounted Drilling Rigs for Rock & Concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.	None	None
	OR		
	Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None
x. Jackhammers & Handheld Powered Chipping Tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10
	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 filter with 99 percent or greater efficiency and a filter-cleaning mechanism:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10

Equipment/Task	Engineering & Work Practice Control Methods	Required Respiratory Protection & Minimum Assigned Protection Factor (APF) ≤4 hours/shift	>4 hours/shift
xi. Handheld Grinders for Mortar Removal (Tuckpointing)	Use grinder 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 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99 percent or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	APF 10	APF 25
xii. Handheld Grinders for uses other than Mortar Removal	For tasks 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 instructions to minimize dust emissions	None	None
	OR		
	Use grinder 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 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99 percent or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism:		
	-When used outdoors	None	None
	-When used indoors or in an enclosed area	None	APF 10
xiii. Walk-Behind Milling Machines & Floor Grinders	Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
	OR		
	Use machine equipped with dust collection system recommended by the manufacturer. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99 percent or greater efficiency and a filter-cleaning mechanism. When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.	None	None

Equipment/Task	Engineering & Work Practice Control Methods	Required Respiratory Protection & Minimum Assigned Protection Factor (APF) ≤4 hours/shift	>4 hours/shift
xiv. Small Drivable Milling Machines (less than ½ lane)	Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant. Operate and maintain machine to minimize dust emissions.	None	None
xv. Large Drivable Milling Machines (½ lane & larger)	For cuts of any depth on asphalt only: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. Operate and maintain machine to minimize dust emissions.	None	None
	For cuts of four inches in depth or less on any substrate: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. Operate and maintain machine to minimize dust emissions.	None	None
	OR		
	Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant. Operate and maintain machine to minimize dust emissions.	None	None
xvi. Crushing Machines	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points). Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station.	None	None
xvii. Heavy Equipment and Utility Vehicles used to Abrade or Fracture Silica-Containing Materials or used during Demolition Activities Involving Silica-Containing Materials	Operate equipment from within an enclosed cab. When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions	None None	None None

Equipment/Task	Engineering & Work Practice Control Methods	Required Respiratory Protection & Minimum Assigned Protection Factor (APF) ≤4 hours/shift	>4 hours/shift
xviii. Heavy Equipment and Utility Vehicles for tasks 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.	None	None
	OR		
	When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

When implementing the control measures specified in Table 1, each employer shall:

For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;

For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;

For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:

- Is maintained as free as practicable from settled dust;
- Has door seals and closing mechanisms that work properly;
- Has gaskets and seals that are in good condition and working properly;
- Is under positive pressure maintained through continuous delivery of fresh air;
- Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 μm range (e.g., MERV-16 or better); AND
- Has heating and cooling capabilities.

Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift.

If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

WRITTEN EXPOSURE CONTROL PLAN

Developed by:		Date:	
Task:			
Engineering Controls			
Work Practice Controls			
Respiratory Protection			
Housekeeping Measures			
Procedures to Restrict Access			
Reviewed by:		Date:	

RCS EXPOSURE ASSESSMENT NOTIFICATION LETTER

Over the Permissible Exposure Limit

Notice Date: _____

Air sampling for respirable crystalline silica was performed on _____. The task(s) performed during air sampling included:

_____

_____

_____

We have received the laboratory results for the recent air sampling indicating a reading of _____ µg/m³. According to OSHA, the Permissible Exposure Limit is 50 µg/m³ as an 8-hour Time-Weighted Average (TWA). Based on these results, exposure to respirable crystalline silica while performing the above listed task(s) was **in excess** of this limit.

The following control measure(s) will be implemented to reduce your exposure:

_____

_____

_____

At this time, please continue to wear your respiratory protection while performing the above listed task(s). This operation will be subject to air monitoring within the next three (3) months.

Employee Name: _____

Employee Signature: _____ Date: _____

This notification must be issued to each affected employee and/or posted in a location where all affected employees have access.

RCS EXPOSURE ASSESSMENT NOTIFICATION LETTER

Under the Permissible Exposure Limit and Over the Action Level

Notice Date: _____

Air sampling for respirable crystalline silica was performed on _____. The task(s) performed during air sampling included:

_____

_____

_____

We have received the laboratory results for the recent air sampling indicating a reading of _____ µg/m³. According to OSHA, the Permissible Exposure Limit (PEL) is 50 µg/m³ and the Action Level (AL) is 25 µg/m³ as an 8-hour Time-Weighted Average (TWA). Based on these results, exposure to respirable crystalline silica while performing the above listed task(s) was **between** the PEL and AL.

At this time, you are no longer required to wear your respiratory protection while performing the above listed task(s). However, since these laboratory results are between the AL and PEL, scheduled air monitoring will be performed every six (6) months.

Employee Name: _____

Employee Signature: _____ Date: _____

This notification must be issued to each affected employee and/or posted in a location where all affected employees have access.

RCS EXPOSURE ASSESSMENT NOTIFICATION LETTER

Under the Action Level

Notice Date: _____

Air sampling for respirable crystalline silica was performed on _____. The task(s) performed during air sampling included:

_____

_____

_____

We have received the laboratory results for the recent air sampling indicating a reading of _____ μg/m³. According to OSHA, the Permissible Exposure Limit (PEL) is 50 μg/m³ and the Action Level (AL) is 25 μg/m³ as an 8-hour Time-Weighted Average (TWA). Based on these results, exposure to respirable crystalline silica while performing the above listed task(s) was **below** the AL.

At this time, you are no longer required to wear your respiratory protection while performing the above listed task(s). In addition, scheduled air monitoring will not be performed as long as there is no change in the production, process, control equipment, or work practices for the above listed task(s).

Employee Name: _____

Employee Signature: _____ Date: _____

This notification must be issued to each affected employee and/or posted in a location where all affected employees have access.

MEDICAL SURVEILLANCE DOCUMENTATION

Information to Physician or other Licensed Health Care Professional

Employee Name: _____ **Date:** _____

The above-named employee of «Q1» is required to undergo a medical examination to comply with the Respirable Crystalline Silica standard (29 CFR 1926.1153). The examination must conform to the guidelines set forth in this standard. Required information has been provided for reference, in addition to the employee's duties, exposure levels and personal protective equipment worn, per the standard.

Copies of the following documentation:

___ §1926.1153 Respirable Crystalline Silica

___ §1926.1153 Appendix B – Medical Surveillance Guidelines

___ Employment-Related Medical Exams

List of Employee Duties (include past, current, and anticipated duties related to silica exposure)

_____

_____

_____

_____

Employee Exposure Levels (include past, current, and anticipated levels related to silica exposure)

_____

_____

Description of Personal Protective Equipment (include type, when and duration of use)

_____

_____

_____

Once complete with the medical examination, per 29 CFR 1926.1153, please complete the 'Written Medical Report for Employee' form and return to the above-named employee for their records. Additionally, please complete the 'Written Medical Opinion for Employer' form and submit to our office for recordkeeping.

MEDICAL SURVEILLANCE DOCUMENTATION

Written Medical Report for EMPLOYEE

Employee Name: _____ **Date:** _____

Type of Examination: ☐ Initial ☐ Periodic ☐ Specialist ☐ Other: _____

Results of Medical Examination:

Physical Examination	☐ Normal	☐ Abnormal (See Below)	☐ Not Performed
Chest X-Ray	☐ Normal	☐ Abnormal (See Below)	☐ Not Performed
Breathing Test (Spirometry)	☐ Normal	☐ Abnormal (See Below)	☐ Not Performed
Test for Tuberculosis	☐ Normal	☐ Abnormal (See Below)	☐ Not Performed
Other: _____	☐ Normal	☐ Abnormal (See Below)	☐ Not Performed

Results Reported as Abnormal: _____

_____

☐ Your health may be at increased risk from exposure to respirable crystalline silica due to the following:

_____

Recommendations:

☐ No limitations on respirator use

☐ Not medically fit for respirator use due to the following reasons: _____

_____

☐ Recommended limitations on respirator use: _____

Dates for respirator use limitations noted above: _____ (MM/DD/YYYY) to _____ (MM/DD/YYYY)

☐ I recommend that you be examined by a Board-Certified Specialist in Pulmonary Disease or Occupational Medicine

☐ Other Recommendations: _____

_____

Your next periodic examination should be in: ☐ 3 years ☐ Other: _____

Examining Provider: _____ (Signature) Date: _____

Provider Name: _____ Date: _____

Address: _____ Office Phone: _____

* These findings may not be related to respirable crystalline silica exposure or may not be work-related, and therefore may not be covered by the employer. These findings may necessitate follow-up and treatment by your personal physician.

MEDICAL SURVEILLANCE DOCUMENTATION

Written Medical Opinion for EMPLOYER

Employer: COMPANYNAME

Employee Name: _____ **Date of Examination:** _____

Type of Examination: ☐ Initial ☐ Periodic ☐ Specialist ☐ Other: _____

Recommendations:

☐ No limitations on respirator use

☐ Recommended limitations on use of respirator: _____

_____

☐ Recommended limitations on exposure to respirable crystalline silica: _____

_____

The employee has provided written authorization for disclosure of the following to the employer (if applicable):

☐ This employee should be examined by an American Board-Certified Specialist in Pulmonary Disease or Occupational medicine

☐ Recommended limitations on exposure to respirable crystalline silica: _____

_____

Dates for exposure limitations noted above: _____ to _____

MM/DD/YYYY MM/DD/YYYY

Next Periodic Evaluation: ☐ 3 years ☐ Other: _____

☐ I attest that the results have been explained to the employee.

The following is required to be checked by the

Physician or other Licensed Health Care Professional (PLHCP):

☐ I attest that this medical examination has met the requirements of the medical surveillance section of the OSHA Respirable Crystalline Silica standard (1910.1053(h) or 1926.1153(h))

Examining Provider: _____ Date: _____

(Signature)

Provider Name: _____ Provider Specialty: _____

Office Address: _____ Office Phone: _____

MEDICAL SURVEILLANCE DOCUMENTATION

Authorization for Physician Opinion to Employer

This medical examination for exposure to respirable crystalline silica could reveal a medical condition that results in recommendations for (1) limitations on respirator use, (2) limitations on exposure to crystalline silica, or (3) examination by a specialist in pulmonary disease or occupational medicine. Recommended limitations on respirator use will be included in the written opinion to the employer. If you want your employer to know about limitations on respirable crystalline silica exposure or recommendations for a specialist examination, you will need to give authorization for the written opinion to the employer to include one or both of those recommendations.

I hereby authorize the opinion to the employer to contain the following information, if relevant (please check all that apply):

- ☐ Recommendations for limitations on respirable crystalline silica exposure
- ☐ Recommendation for a specialist examination

  OR
- ☐ I do not authorize the opinion to the employer to contain anything other than recommended limitations on respirator use.

Please read and initial:

- ☐ I understand that if I do not authorize my employer to receive the recommendation for a specialist examination, the employer will not be responsible for arranging and covering costs of a specialist examination under the OSHA standard for respirable crystalline silica.

Employee Name: _____

Employee Signature: _____ Date: _____

