A GUIDE TO THE OSHA SILICA STANDARD

2017

By: AGC – Houston Chapter Safety Committee

Created as a service to the members of the AGC Houston Chapter.

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Acknowledgement

The AGC Houston Chapter Safety Committee formed a taskforce charged with reviewing OSHA's 29 C.F.R. 1926.1153, Respirable Crystalline Silica Standard. The purpose of the Taskforce was to create a document offering guidance to AGC Chapter members on achieving compliance with said Standard. To accomplish this, the Committee assigned specific sections of the Standard to small groups of Committee members. Each group offered a summary of their understanding of the requirements under their assigned section of the Standard.

It is important to note that this document offers general guidelines for compliance. As a new rule, this Standard will be subject to interpretations by OSHA. Contractors should carefully read the full content of the Standard to establish any further compliance steps applicable to their specific scope of work. This guide is not a substitute for legal advice and the AGC disclaims any liability for any errors and omissions which may be contained in this guide.

The AGC – Houston Chapter Safety Committee extends a note of gratitude to everyone who participated on this project.

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I. PURPOSE

This program has been developed to protect site employees, who in the course of their work, may be exposed to various operations where the dust generated may contain respirable crystalline silica.

II. SCOPE

This section applies to all occupational exposures to respirable crystalline silica in construction work, except where employee exposure will remain below 25 micrograms per cubic meter of air (25 µg/m3) as an 8-hour time weighted average (TWA) under any foreseeable conditions.

III. PROGRAM OVERVIEW

_____ (COMPANY NAME) will:

A. Establish, implement, and maintain a Written Exposure Control Plan that identifies tasks that involve exposure to respirable silica and methods used to protect workers, including procedures to restrict access to work areas where high exposures may occur. _____ (COMPANY NAME) will evaluate all processes to determine if compliance using Table 1 in the OSHA silica standard www.osha.gov/silica/SilicaConstructionRegText.pdf or alternate control methods will be implemented.

B. Ensure that materials (e.g., tools, equipment, PPE) and other resources such as worker training materials required to fully implement and maintain this exposure control plan are readily available where and when they are required.

C. Provide a job/ Written Exposure Control Plan which details the work methods and practices that will be followed on each site. Considerations will include:
   - Availability and delivery of all required tools/equipment
   - Scope and nature of work to be conducted
   - Control methods to be used
   - Housekeeping
   - Level of respiratory protection required
   - Coordination plan

D. Designate a competent person to implement the written exposure control plan. _____ (COMPANY NAME) site supervision will be trained as competent persons under this plan.

E. Restrict housekeeping practices that expose workers to silica where feasible alternatives are available.

F. Initiate sampling of worker exposure to silica dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective

G. Offer medical exams—including chest X-rays and lung function tests—every three years for workers who are required by the standard to wear a respirator for 30 or more days per year.

H. Train supervisors and workers on work operations that result in silica exposure and ways to limit exposure.

I. Keep records of workers' silica exposure and medical exams.

J. Ensure site subcontractors provide written silica control plans prior to the commencement of any work that may result in the release of silica dust.

K. Maintain records of training, safety meetings, inspections, work methods, audits.

L. Conduct, at a minimum, annual reviews of this plan to ensure effectiveness. Any identified gaps or incidents may result in more frequent reviews.

IV. RESPONSIBILITIES

A. _____ (Name/Position i.e. Safety Director) is responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program.

B. _____ (Name/Position i.e. Safety Director) will develop written detailed instructions covering each of the basic elements in this program, and is the person authorized to amend these instructions.

C. _____ (Name/Position i.e. Safety Director) is responsible for ensuring the following program elements are implemented and maintained:

- Ensure Written Exposure Control Plan is current and details compliance requirements and acceptable industry practices through regular program reviews.
- Implement appropriate silica exposure monitoring program or ensure Table 1 of the OSHA Respirable Crystalline Silica Standard, 29 CFR 1926.1153 is applied.
- Ensure job/task/ Written Exposure Control Plans are developed and implemented appropriately (ex. Through inspections/verification visits).

- Review equipment and related technology advancements for consideration of implementation into current work practices (ex. Dust collection/suppression, vacuums, etc.)
- Ensure medical surveillance procedures are implemented and properly maintained.
- Ensure employee training/education related to silica, silica exposure and the requirements of this program are communicated effectively.
- Ensure job/site/task Specific Written Exposure Control Plans are effectively communicated to employees.
- Recordkeeping-maintain appropriate documentation related to this program (monitoring reports, training records, medical surveillance, inspections, etc.)
- Ensure competent persons responsible for implementation of this program make frequent and regular inspections of the job sites, materials, equipment and processes to implement the Written Exposure Control Plan.

D. Superintendents/Project Managers are responsible for silica exposure prevention on their job including:
   - Ensure workers are trained in accordance with this document and the requirements for prevention of silica exposure.
   - Obtain a copy of the exposure control plan from subcontractor employers.
   - Select/implement/direct/document the appropriate control measures for their respective job site.
   - Providing adequate instruction to workers on the hazards of working with silica-containing materials (ex: concrete) and on the precautions specified in the job-specific plan covering hazards at the location.
   - Ensure that workers are using the proper respirators and have been fit-tested with documented results.

E. Competent Person(s) will be responsible for ensuring the requirements of this program are in effect on their respective jobs. Competent person responsibilities include:
   - Identification of any known and/or anticipated respirable silica hazard related to a job or task.
   - Ensure the Written Exposure Control Plan has been created, communicated to all site personnel, and implemented effectively.
   - Conduct frequent inspections of the job sites, materials, equipment and processes and having the authority to initiate prompt corrective actions when necessary.

F. Workers/Employees are responsible for compliance with the silica exposure control plan. Specific responsibilities include:

- Attending required orientation/training sessions that review silica producing tasks and associated hazards.
- Using and maintaining assigned PPE for prevention of silica exposure.
- Performing tasks/operations following the silica exposure prevention plan.
- Becoming familiarized with conditions or procedures that could potentially expose workers to silica.
- Notify site supervision if the work in which they are involved has not been properly evaluated for silica dust exposure or believe they have been exposed to silica dust.

G. Subcontractor Companies are expected to comply with the requirements of this program. Subcontractors who provide services/perform operations that generate airborne silica dust are required to provide _____ (Company Name/Name of responsible person) with their silica exposure control plan prior to the commencement of work.

V. ENFORCEMENT

_____ (Company Name) will ensure compliance with this program is maintained through frequent site evaluations and/or audits. Questions regarding requirements or compliance should be directed to _____ (Name/Position i.e. Safety Director). _____ (Company Name) reserves the right to remove any subcontractor/supplier/worker from the site for noncompliance with this program.

VI. DEFINITIONS

Action Level – a concentration of airborne respirable crystalline silica of 25μg/m3, calculated as an 8 hour TWA.

Assistant Secretary – the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

B Reader - A "B" reader is a physician certified by the National Institute for Occupational Safety and Health (NIOSH) as demonstrating proficiency in classifying radiographs of the pneumoconiosis.

Competent person – an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in standard.

Director – the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

Employee exposure – the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.

Exposure Assessment – The initial determination to find if any employee may be exposed to respirable crystalline silica at or above the permissible exposure level. Until the assessment is completed, employees will take all precautions necessary to maintain exposures below the PEL.

High efficiency particulate filter – a filter that is at least 99% or greater efficiency in removing mono-dispersed particles of 0.3 micrometers in diameter. Dust collectors such as a shroud shall use a high efficiency filter and a filter cleaning mechanism while vacuums shall use a HEPA filter with 99.97% efficiency when cleaning up the work area.

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 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) – The employer will ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50μg/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 the particular health care services required by this standard.

Respirable crystalline silica – is 100 times smaller than a piece of sand (invisible dust), quartz, cristobalite, and/or tridymite contained in airborne 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.

Silica containing material – Any material, which has the potential to contain silica at levels, which may pose a hazard to employees when the material is manipulated to create airborne particles.

Specialist – an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

VII. GENERAL PROGRAM REQUIREMENTS

A. HAZARD ASSESSMENT AND RISK IDENTIFICATION

_____ (COMPANY NAME) has completed an evaluation of project tasks and related materials that may expose a worker to respirable silica. The tasks and materials are identified below. *This list identifies the most common tasks/materials used in commercial construction and should not be considered all inclusive.*

TASKS	MATERIALS
Abrasive blasting	Asphalt (for paving)
Cutting/sawing	Brick/masonry
Demolition	Cement
Drilling	Concrete
Earth moving	Fiber cement products
Grinding	Grout
Jackhammering	Gunite/Shotcrete
Milling	Mortar
Polishing	Paints containing silica
Mixing	Plaster
Sanding	Rock/stone
Sacking/patching	Refractory mortar/castables
Scarifying	Stucco
Scraping	Terrazo
Sweeping/cleaning up	
Pick and shovel work	
Glass cutting	
Tuck pointing	
Chipping	
Scabbling	
Installing concrete forms	

The competent person for each job site will conduct a silica exposure hazard assessment and generate a *site specific* Written Exposure Control Plan prior to the commencement of work.

The Written Exposure Control Plan will be reviewed with all employees prior to starting their work. Employees are required to follow the requirements of the Written Exposure Control Plan.

The Written Exposure Control Plan will include the following:

- A description of the tasks in the workplace that involve exposure to respirable crystalline silica;
- A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task;

- A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers.

The competent person will make frequent and regular inspections of job sites, materials, and equipment to ensure implementation and compliance with the Written Exposure Control Plan.

The plan will be updated as needed (change in processes/tasks/controls/tools).

_____ (COMPANY NAME) will review this policy and evaluate the effectiveness of the Written Exposure Control Plan at least annually and update it as necessary.

_____ (COMPANY NAME) will make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary and the Director.

VIII. MEDICAL SURVEILLANCE

A. PROGRAM REQUIREMENTS

A medical surveillance program shall be offered for employees who are exposed to respirable silica dust and required to wear a respirator at any time during a workday for 30 or more days per year. The medical surveillance program shall be offered using appropriate, local medical providers, during work hours, and at no cost to the employee. The medical surveillance program will include the following:

1. Pre-employment and pre-placement medical examinations – An initial (baseline) medical exam within 30 days after initial assignment shall be offered, unless the employee has received a previous medical examination that meets the requirements of this surveillance program within the last 3 years.

   The initial examination will consist of:

   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;
   b) 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;

c) An examination with special emphasis on the respiratory system;
d) 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 Labor Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader;
e) A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course;
f) Testing for latent tuberculosis infection;
g) Any other tests deemed appropriate by the physician or health care provider.
h) Appendix B

2. Periodic medical examinations – Physical examinations with special emphasis on the respiratory system, meeting the requirements of this medical surveillance program shall be offered at least every three years, or more frequently if recommended by a physician or other licensed health care professional.

3. Information provided to the physician – _____ (COMPANY NAME) will ensure that the examining physician or licensed health care provider has a copy of this standard as well as the following information:
   a) A description of the employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to respirable crystalline silica;
   b) The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;
   c) A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used or will use that equipment; and
   d) Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the company.

4. Medical reports – _____ (COMPANY NAME) 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 30 days of each medical examination performed. The written report will contain:
   a) A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment

to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;

b) Any recommended limitations on the employee's use of respirators;

c) Any recommended limitations on the employee's exposure to respirable crystalline silica; and

d) A statement that the employee should be examined by a specialist if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

5. Physician or Licensed Health **Care Professional's Medical Opinion for Employer** – _____ (COMPANY NAME) will obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion will contain only the following:

   a) The date of the examination;

   b) A statement that the examination has met the requirements of the silica standard;

   c) Any recommended limitations on the employee's use of respirators.

   If the employee provides written authorization, the written opinion will also contain either or both of the following:

   a) Any recommended limitations on the employee's exposure to respirable crystalline silica;

   b) A statement that the employee should be examined by a specialist if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

   _____ (COMPANY NAME) will ensure that each employer receives a copy of the written medical opinion within 30 days of each medical examination performed.

6. Additional examinations/follow up examinations with specialists – If the PLHCP's written medical opinion indicates that an employee should be examined by a specialist, _____ (COMPANY NAME) will make available a medical examination by a specialist within 30 days after receiving the PLHCP's written opinion.

   a) _____ (COMPANY NAME) will ensure that the examining specialist is provided with the same information provided for the employee's initial examination;

   b) _____ (COMPANY NAME) will ensure that the specialist explains to the employee the results of the medical examination and

provides each employee with a written medical report within 30 days of the examination. The written report will meet the requirements of the standard and contain:

- A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;
- Any recommended limitations on the employee's use of respirators;
- Any recommended limitations on the employee's exposure to respirable crystalline silica.

7. **Specialist Physician's Medical Opinion for Employer** – _____ (COMPANY NAME) will obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion will contain only the following:
   a) The date of the examination,
   b) A statement that the examination has met the requirements of the silica standard,
   c) Any recommended limitations on the employee's use of respirators.

IX. COMMUNICATION OF RESPIRABLE CRYSTALLINE SILICA HAZARDS TO EMPLOYEES

A. HAZARD COMMUNICATION

_____ (COMPANY NAME) will ensure that each employee has access to labels on containers of crystalline silica and safety data sheets (SDS), and is trained in accordance with the provisions of HCS and the training requirements outlined in this policy.

B. DESCRIPTION OF SILICA

Silica is a one of several chemicals included in the larger classification of silicon dioxide (SiO2). Silicon dioxide is a chemical compound that includes crystalline silica (sand, quartz), amorphous silica (non-crystalline), and silicates (aluminum silicate). Crystalline silica is the basic component of sand, quartz, and granite rock. This form of silica is obtained from the earth's crust through mining. Crystalline silica can be processed into other materials including silica flour. Silica flouris produced through the milling of crystalline silica into a fine powder. Crystalline silica is present in several forms, including quartz, tridymite, and cristobalite

C. SILICA RELATED HEALTH HAZARDS

Exposure to respirable crystalline silica can occur in a variety of industries and occupations, including construction, sandblasting, and mining. Silicosis, an irreversible but preventable

disease, is the illness most closely associated with occupational exposure to the material, which also is known as silica dust. Occupational exposures to respirable crystalline silica are associated with the development of silicosis, lung cancer, pulmonary tuberculosis, and airways diseases. These exposures may also be related to the development of autoimmune disorders, chronic renal disease, and other adverse health effects.

Onset of silicosis can be faster and the severity of disease worse in the setting of high level exposures, which can cause accelerated or acute silicosis.

- Chronic silicosis – Most common form, after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.
- Accelerated silicosis – Onset 5-10 years after initial exposure to high concentrations of respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.
- Acute silicosis – Quickly develops after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

Examples of occupations with known high silica exposure include: mining, quarrying, sandblasting, rock drilling, road construction, pottery making, stone masonry, and tunneling operations.

D. PERSONAL HYGIENE

- Use appropriate PPE provided for prevention of exposure to respirable crystalline silica-do not alter.
- Employee shall not have facial hair in a manner that will prevent a good seal between the respirator and face.
- Do not eat, drink, smoke, or apply cosmetics in areas where crystalline silica dust is present.
- Wash your hands and face outside of dusty areas before eating/drinking.

COMPLIANCE OPTIONS *NOTE: For tasks not listed in Table 1, or when the controls cannot be fully and properly implemented, the employer should refer to the options outlined in 29 CFR 1926.1153,

section (d) "Alternative exposure control methods" to ensure workers are not exposed above the PEL.

X. COMPLIANCE OPTIONS

_____ (COMPANY NAME) will evaluate each task/job process and determine the appropriate compliance approach to prevent employee exposure to respirable crystalline silica.

A. Appendix A– Lists of tasks and equipment control measures OSHA deems necessary to lower airborne respirable crystalline silica to acceptable levels. Full implementation of Table 1 will remove the requirement of performing air monitoring for those tasks.

   Compliance with Table 1 requires fully and proper implementation of the specific control measures identified in the table including:
   - Providing a means of exhaust for task performed indoors/enclosed areas.
   - Applying water suppression minimize airborne dust.
   - Utilizing closed cab equipment ensuring they are:
     - Free from settled dust
     - All seals work properly
     - Continuous delivery of fresh air circulated through 95% efficient filter
     - Heating and cooling systems.
   - Ensuring employees performing multiple tasks on Table 1 are given proper respiratory protection throughout the day.

B. PERFORMANCE OPTION OR OBJECTIVE DATA – OSHA allows objective data to be used that demonstrates control measures being used reduce the airborne respirable crystalline silica exposure to below 50 µg/m3 per 8-hour time weighted average. Objective data would include air monitoring sampling/measurements conducted by the employer, gotten from sources such as other companies, tool manufacturers, universities, national databases, manufacturers, trade organizations, health organizations, etc and would closely mirror the employee exposure conditions for a specific task, process, or activity.

   Compliance with the performance options requires:
   - Any data collected for evidence under the performance option 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.

C. SCHEDULED MONITORING OPTION – Requires the employer to perform air monitoring to evaluate the 8-hour time weighted average exposure of each employee and adhere to a monitoring schedule.

Compliance with the scheduled monitoring option requires:

- Conduct initial monitoring of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each task/job classification, in each work area.
- Conduct representative sampling for tasks/work areas where there are multiple employees doing the same job. Sample the employees who are expected to have the highest exposure to respirable crystalline silica.
- Initial monitoring that reflects exposures below the action level of 25 µg/m3, no additional monitoring is required.
- Recent monitoring results at or above the action level, but below the PEL, requires repeating the monitoring within 6 months.
- Recent monitoring results above the PEL, repeat monitoring within 3 months.
- If the most recent monitoring (non-initial) indicates that exposures are below the action level, repeat within 6 months until two consecutive measurements, taken seven days or more apart, are below the action level. Additional monitoring can be discontinued at this time.
- Reassessment of exposures should be initiated in the event of changes in processes, controls, personnel, or work practices that may be reasonably expected to result in new/additional exposures at or above the action level or when there is reason to believe a new/additional has occurred.

D. SAMPLE ANALYSIS

_____ (COMPANY NAME) will ensure that all samples collected for monitoring respirable crystalline silica will be analyzed by laboratories meeting the requirements of Appendix A of OSHA's Silica rule, 29 CFR 1926.1153.

_____ (COMPANY NAME) will obtain a statement from the laboratory stating that samples will be analyzed according to Appendix A of the standard. https://www.osha.gov/silica/AppendixAtosect1926.1153.pdf

XI. CONTROLLING EXPOSURES

A. ENGINEERING AND WORK PRACTICE CONTROLS

_____ (COMPANY NAME) will implement the use of engineering and work practice controls to ensure employee exposures to respirable crystalline silica to or below the PEL, or as outline in Table 1, unless it can be proven that such controls are not feasible.

When engineering and work practice controls are not sufficient alone to bring employee exposures to or below the PEL, _____ (COMPANY NAME) will supplement the controls with the use of respiratory protection.

XII. RESTRICTED ACCESS TO WORK AREAS

_____ (COMPANY NAME) will ensure access is restricted to areas where work being performed may generate dust containing silica.

- These work areas will be identified using either warning signs or hard barriers.
- Tasks being performed that produce dust containing silica should be scheduled appropriately as to minimize exposures to adjacent workers.
- Nonessential and unprotected workers should be informed to stay away from the work area.
- Personnel having to enter the work area should be advised that a respirator is required in areas where silica dust levels may be above the PEL.

XIII. EMPLOYEE NOTIFICATION OF MONITORING RESULTS

Within 5 working days of completing a silica exposure assessment (results have been received from a laboratory) _____ (COMPANY NAME) will notify in writing, all affected employees either individually or by posting of results in a conspicuous location.

Monitoring results indicating that exposures are above the PEL, _____ (COMPANY NAME) will describe in the written notice the corrective actions being taken to reduce the exposure to or below the PEL.

XIV. OBSERVATION OF MONITORING

_____ (COMPANY NAME) will provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to crystalline silica when being conducted to comply with requirements of the standard.

In the event the monitoring is conducted in an area where protective clothing or equipment is required, _____ (COMPANY NAME) will provide observers with protective clothing and equipment at no cost. Additionally, _____ (COMPANY NAME) will ensure the use of protective clothing and equipment by observers.

XV. RESPIRATORY PROTECTION

_____ (COMPANY NAME) will ensure appropriate respiratory protection will be provided to employees when:

- Specified by Table 1
- For tasks not listed in Table 1

- When engineering and work practice controls specified by Table 1 are not fully implemented.
- Where exposures exceed the PEL during periods necessary to install/implement feasible engineering and work practice controls
- Where exposures exceed the PEL during tasks such as maintenance/repair when engineering and work practice controls are not feasible;
- Where all feasible engineering and work practice controls are implemented and are not sufficient to reduce exposures to or below the PEL.

Respiratory protection program – Respiratory use for compliance with this program will be in accordance with 29 CFR 1910.134.

XVI. HOUSEKEEPING

Company must follow requirements of this section where employees could be exposed to small respirable crystalline silica particles.

_____ (COMPANY NAME) does not engage in dry sweeping when such activity could contribute to exposure to respirable crystalline silica. Wet sweeping, floor sweep compounds, or filtered vacuuming will be used to minimize exposure to respirable crystalline silica, when feasible.

Employees are not to use compressed air to clean clothing or surfaces as such activities could contribute to exposure of respirable crystalline silica.

Employers are not required to follow the housekeeping requirements when cleaning ordinary soil, large debris, and non-silica containing materials such as saw dust.

XVII. TRAINING

A. EMPLOYEE TRAINING

_____ (COMPANY NAME) will ensure employees are trained in and can demonstrate knowledge and understanding of this silica policy.

Training content will consist of:

- Health hazards associated with exposure to respirable crystalline silica.
- Workplace tasks that could expose workers to silica.
- Exposure control measures including engineering controls, work practices, and respiratory protection implemented by _____ (COMPANY NAME).
- Designated competent persons-who they are, what they do.
- Description of the medical surveillance program and its purpose.

- Worker responsibilities related to prevention of exposure to respirable crystalline silica as outlined in this policy.

_____ (COMPANY NAME) will make a copy of the training information and documentation available at no cost to all affected workers.

B. COMPETENT PERSON TRAINING

_____ (COMPANY NAME) will ensure competent persons responsible for implementation of control measures and work practice activities outlined in the policy receive training to include:

- Review of _____ (COMPANY NAME) policy related to prevention of exposure to respirable crystalline silica
- Health hazards associated with exposure to respirable crystalline silica
- Workplace tasks that could expose workers to silica
- What is the action level?
- What is the PEL?
- Exposure control measures including engineering controls, work practices, and respiratory protection
- Worker training requirements
- Housekeeping
- Personal hygiene
- Restricted work areas
- PPE
- What is exposure monitoring?
- How to create a written exposure control plan

XVIII. RECORDKEEPING

A. AIR MONITORING/SAMPLING

_____ (COMPANY NAME) will make and maintain an accurate record of all objective data relied upon to comply with the requirement of this section.

This record shall include at the 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;
- Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were monitored.

_____ (COMPANY NAME) will ensure that exposure records are maintained and made available in accordance with 29 CFR 1910.1020.

B. OBJECTIVE DATA

_____ (COMPANY NAME) will make and maintain an accurate record of all objective data relied upon to comply with the requirements of this section.

This record shall include at the least the following information:

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

_____ (COMPANY NAME) will ensure that objective data is maintained and made available in accordance with 1910.1020.

C. MEDICAL SURVEILLANCE

_____ (COMPANY NAME) will make and maintain an accurate record for each employee covered by medical surveillance as described below.

This record shall include the following information about the employee:

- Name and social security number;
- A copy of the PLHCPs' and specialists written opinions; and
- A copy of the information provided to the PLHCPs and specialists

_____ (COMPANY NAME) will ensure that medical records are maintained and made available in accordance with 29 CFR 1910.1020.

D. EMPLOYEE TRAINING

_____ (COMPANY NAME) will make and maintain, an accurate record of each employee trained and covered by this policy. The training record shall include:

- Name

- Date of training
- Employer (if subcontractor)
- Trainer Name
- Content of training/topic

XIX. WRITTEN EXPOSURE CONTROL PLAN FOR MITIGATING SILICA WITHIN THE WORKPLACE

Project Name: _____ Project No.: _____

Competent Person: _____ Date: _____ Time: _____

Source of respirable silica: _____

Description of task that may be affected by identified silica: _____

_____

Personnel on the task or working in affected area:		Trained in Silica:	
1	_____	Y	N
2	_____	Y	N
3	_____	Y	N
4	_____	Y	N
5	_____	Y	N
6	_____	Y	N
7	_____	Y	N
8	_____	Y	N
9	_____	Y	N
10	_____	Y	N

Detailed description of method(s) used to protect worker(s) from exposure: _____

_____

Housekeeping method(s) used to limit exposure: _____

_____

Method to restrict access to affected area: _____

_____

Respirator Protection: _____

Competent Person: Complete and submit to: _____

_____ _____

Competent Person Signature Date

XX. APPENDIX A – TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and 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. – When used indoors or in an enclosed area.	None APF 10	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 the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% 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. – When used indoors or in an enclosed area.	None APF 10	None 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

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(vi) Rig-mounted core saws 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
(vii) Handheld and stand-mounted drills (including impact and 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% 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% 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 and 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. OR Operate from within an enclosed cab and use water for dust suppression on drill bit.	None None	None None
(x) 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. – When used outdoors. – When used indoors or in an enclosed area. OR Use tool equipped with commercially available shroud and dust collection system.	None APF 10	APF 10 APF 10

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
	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% or greater efficiency and a filter-cleaning mechanism. – When used outdoors. – When used indoors or in an enclosed area.	 None APF 10	 APF 10 APF 10
(xi) 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 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% 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. 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% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism. – When used outdoors. – When used indoors or in an enclosed area.	 None None None	 None None APF

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(xiii) Walk-behind milling machines and 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. OR	None	None
	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% 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
(xiv) Small drivable milling machines (less than half-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 (half-lane and 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. OR	None	None

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
	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 (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 of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None None	None None
(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. OR When the equipment operator is, the only employee engaged in the task, operate equipment from within an enclosed cab.	None None	None None

XXI. APPENDIX B – MEDICAL SURVEILLANCE / REPORT AUTHORIZATION

Name: _____ (Print clearly)

Employer: _____ (Print clearly)

Your employer has made available to your medical examination for exposure to crystalline silica at no cost to you. This medical examination 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. The following results of this exam will be given to your employer:

(A) The date of the exam;
(B) A statement that the exam met the requirements of 29 CFR 1926.1153;
(C) Any limitation on your use of respirators.

☐ I hereby authorize _____ (Company Name) to provide the above medical surveillance as outlined in 29 CFR 1926.1153.

OR

☐ I hereby do not authorize _____ (Company Name) to provide the above medical surveillance as outlined in 29 CFR 1926.1153.

If you want your employer to know additional information concerning your 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 _____ (Company Name) to contain the following information, if relevant (please initial all that apply):

o _____ Recommendations for limitations on crystalline silica exposure.
o _____ 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 specialist examination, the employer will not be responsible for arranging and covering costs of a specialist examination.

Signature Date

XXII. APPENDIX C –AGC SILICA MONITORING FORM (SAMPLE)

AGC of America

Silica Monitoring Form

Instructions
1. Use this form to collect information on employee(s) exposure from **one** product or material, or process, task, or activity. The information will be used for recordkeeping purposes and includes information requested in paragraphs (j)(1)(ii), air monitoring data, and (j)(2)(ii), objective data, of the construction standard (29 CFR 1926.1153). **2.** Exposure assessment must reflect the exposures of employees on each shift, for each job classification, in each work area. **3.** Reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.

Purpose	
☐ Air Monitoring Data ☐ Initial ☐ Re-sampling	☐ Objective Data, Source: _____ ☐ Reassessment, Change in: _____

Date	Contractor	Region	Site
		☐ Northeast (NE) ☐ Southeast (SE) ☐ Southwest (SW) ☐ West (W) ☐ Midwest (MW)	

Employees Represented by Monitoring

Name	ID	Job Class	PPE Used	Monitored (Y/N)

Job Description

Type of Work Being Performed			
Task	Time Performed (%)	Task	Time Performed (%)
☐ Cutting (C)	☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75	☐ Mixing Concrete (MC)	☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75
☐ Grinding (G)	☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75	☐ Mixing Mortar (MM)	☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75
☐ Drilling (D)	☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75	☐ Terrazzo Work (TW)	☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75
☐ Other:			☐ <25 ☐ 25-50 ☐ 50-75 ☐ >75

Base Material	Silica Content of Base Material
☐ Block (BL) ☐ Other: ☐ Brick (BR) ☐ Concrete (C)	☐ From bulk sample _____ ☐ From estimate (MSDS or list) _____ ☐ Unknown
Tool(s) Used	**PPE Used**
Make: _____ Model: _____	☐ Dust Mask (DM) ☐ Half Face (HF) ☐ Full Face (FF) ☐ Protective Clothing (PC) ☐ Glove (G) ☐ Other:

AGC of America

Silica Monitoring Form

Control Method(s)		
☐ None (N) ☐ Dry (D) ☐ Natural Ventilation (NV) ☐ General Mechanical (GM) ☐ Local Exhaust Ventilation - with HEPA vacuum (LE-HEPA) ☐ Local Exhaust Ventilation - with shop vac or other vacuum (LE-OTHER) ☐ Wet Method - Continuous Drip (WM-CD) ☐ Wet Method - Continuous Spray (WM-CS) ☐ Wet Method - Non-continuous Drip (WM-NCD) Frequency: _____ ☐ Wet Method - Non-continuous Spray (WM-NCS) Frequency: _____ ☐ Other:		
Silica written exposure control plan in effect?	☐ Yes	☐ No
Controls checked during sampling period?	☐ Yes	☐ No
Employee trained and familiar with operation of controls?	☐ Yes	☐ No

Environment	Nearby Visible Dust Sources
☐ Outdoors	☐ None
☐ Open Sided (Free Flow)	☐ Other workers doing same task
☐ Enclosed on 1 Side (Limited Flow)	☐ Partial from other tasks and sources
☐ Enclosed All Sides (No Flow)	☐ Continuous from other tasks and sources
☐ Other:	☐ Other:

Other Possible Interferences in Sampling Area(s)

Wind Speed (mph)		Source	Temperature (°F)		Humidity (%)	
☐ None	☐ <5	☐ None	☐ <40	☐ 40-90	☐ <20	☐ 20-40
☐ 5-10	☐ >10	☐ Natural	☐ >90		☐ 40-60	☐ 60-80
		☐ Artificial			☐ >80	

Type & Number of Samples Collected

☐ Personal (P): _____ ☐ Area (A): _____ ☐ Bulk (B): _____

Agent

☐ Silica (S) ☐ Silica w/ Respirable Dust (S/RD) ☐ Silica w/ Total Dust (S/TD)

Sample ID	Description	Date Sampled	Collection Medium	Sample Volume, Time, or Area	Sample Units L, mL, min, in, ft^2	Analysis Requested*

*Analytical Methods: OSHA ID-142, NMAM 7500, NMAM 7602, NMAM 7603, MSHA P-2, or MSHA P-7.

AGC of America

Silica Monitoring Form

Laboratory Utilized (Name and Location)	

Laboratory Results	
Volume of Sample (L) [Average Flow Rate x Duration]	Volume of Sample (m^3) [1000 L = 1 m^3]

Weight (mg)			
Respirable Dust	α-Quartz	Cristobalite	Tridymite

Silica Content (%)		
α-Quartz	Cristobalite	Tridymite

Exposure Calculations

PEL ** **= 0.050 mg/m³ or 50 µg/m³**

Silica Conc. $_{Total}$ = mg/m^3 α-Quartz + mg/m^3 Cristobalite + mg/m^3 Tridymite = mg/m^3

Exposure (8-hr TWA) = $\frac{[(mg/m^3_{(1)} * \text{time, } min_{(1)}) + \ldots + (mg/m^3_{(n)} * \text{time, } min_{(n)})]}{480 \text{ min}}$ = mg/m^3

** mg/m^3 x 1000 = $\mu g/m^3$

Comments

Sampled By:
Name (Print)
Signature