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	1926.1153
	1910.1053

Silica Exposure Control Program

I. Introduction

The purpose of this Silica Exposure Control Program is to minimize or eliminate employee's exposure to silica dust. Silica containing material that is in good condition, and is not somehow damaged or disturbed, is not likely to release respirable silica dust into the air.

Crystalline silica is a common mineral found in many naturally occurring materials and used in many industrial products. Materials like sand, concrete, stone, and mortar contain crystalline silica. If a product's Safety Data Sheet (SDS) is available, review the SDS for any crystalline silica ingredients. There are different forms of silica: crystalline silica and noncrystalline forms (amorphous type). The three most common types of crystalline silica of concern to human health are quartz, cristobalite, and tridymite. Activities such as abrasive blasting with sand; sawing asphalt, brick or concrete; sanding or drilling into concrete walls; grinding mortar and cutting or crushing stone generates respirable crystalline silica dust.

This program applies to all City employees who perform work involving the disturbance of silica containing materials. Fire personnel shall refer to their internal procedures for handling silica containing material.

II. General Requirements

Supervisors or a designated "Responsible Person" shall make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan. A Responsible Person means 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.

When tasks are performed in accordance with this program and the Specified Exposure Control Measures in Table 1 are followed, this program will serve as the written Silica Exposure Control Plan. If a task must be performed that is not addressed by the Specified Exposure Control Measures in Table 1, exposure monitoring must be performed and a worksite or task specific exposure control plan must be developed prior to work commencing. Please contact Risk and Safety Services for guidance. The Silica Exposure Control Plan must be reviewed at least once a year for effectiveness and verify up-to-date information.

All contractors will adhere to the expanded OSHA health standard (1926.1153). OSHA has identified carpenters, plumbers, and electricians as types of workers who may perform tasks (i.e. drilling with a handheld drill) involving occasional, brief exposures to silica that are incidental to their primary work. Provided that these employees perform these tasks in isolation from activities that generate significant exposures to silica, and perform them for no more than fifteen (15) minutes throughout the work day. Dividing tasks into 15 minute segments is not a sufficient exposure control plan and would be considered out of compliance with this program. Tasks lasting longer than the fifteen (15) minute exemption are required to adhere to all requirements mentioned in this program. Employees engaged in this type and duration of work will not be covered by this program.

III. Training Requirements

Employees who perform repair and maintenance tasks where respirable silica dust is or will be present shall participate in Silica Exposure Awareness Training prior to performing duties. Examples of this type of work include any intentional cutting, breaking, scraping, drilling or sanding of silica containing material. Employees who successfully complete this training meet the definition of a "Responsible Person" in section II. General Requirements of this program.

IV. Warning Signs

Departments shall install signs which warn others of the disturbance of respirable silica dust when silica dust is unable to be controlled via engineering controls (i.e. HEPA vacuum, wet method) and it is anticipated the concentrations of respirable silica will exceed the Permissible Exposure Limit in the area where the work is being completed.

Danger sign should read:

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

V. Personal Protective Equipment and Required Work Procedures

All employees shall wear appropriate personal protective equipment (PPE) when cleaning, repairing or maintaining material that may generate silica dust. See Table 1 for respiratory protection requirements. Employees who will wear a tight-fitting elastomeric (molded plastic) respirator with replaceable cartridges (APF 10 or greater) must be enrolled into the City's Respiratory Protection Program. Being enrolled in this program requires the employee to complete Respiratory Protection training, complete a medical evaluation questionnaire and complete a respirator fit test. Medical evaluation questionnaires are located in the employee policy handbook under the "Safety and Security" section. Contact the Risk and Safety Department to have a respirator fit test completed. When filtering facepieces (dust masks) are used voluntarily, the employee is expected to abide by all manufacturer requirements to ensure that the respirator itself does not present a hazard. Employees who voluntarily wear filtering facepieces (dust masks) are not subject to the medical evaluation or fit testing provisions of the City's Respiratory Protection Program.

VI. Housekeeping

Dry sweeping or dry brushing of dust containing respirable crystalline silica is not allowed. A HEPA filtered shroud (e.g. drill shroud) and/or vacuum cleaner will be used to clean and control dust. Conduct wet mopping or wet sweeping as necessary. Compressed air will not be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica.

VII. Medical Surveillance

The employer shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this program to use a respirator for 30 or more days per year. Supervisors shall contact Risk and Safety if you have employees who wear a respirator 30 or more days a year.

VIII. TABLE 1

Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica

For each employee engaged in a task identified in Table 1, the employee shall fully and properly implement the engineering controls, work practices, and respiratory protection specified in that section of Table 1.

Where an employee performs more than one task from Table 1 during the course of a shift, the total duration of all tasks must be combined. If that total exceeds four hours, then the required respiratory protection for each task is 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 specified for less than four hours per shift.

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 Saw	Use saw equipped with integrated water delivery system that continuously feeds water to blade. Operate and maintain tool per manufacturer's instructions to minimize dust.	None	None
(ii) Handheld Power Saw (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	<ul style="list-style-type: none"> When Used Outdoors 	None	APF 10
	<ul style="list-style-type: none"> 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 the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.	None	None
(iv) Walk-behind Saw	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:		
	<ul style="list-style-type: none"> When Used Outdoors 	None	None
	<ul style="list-style-type: 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 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

EQUIPMENT/TASK	TABLE 1 ENGINEERING AND WORK PRACTICE CONTROL METHODS	REQUIRED RESPIRATORY PROTECTION AND MINIMUM ASSIGNED PROTECTION FACTOR (APF)	
		≤ 4 hours/shift	> 4 hours/shift
(vii) Handheld and Stand-Mounted Drills (including Impact and Rotary And 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 rig 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.	APF 10	APF 10
(ix) Vehicle-mounted Drilling Rig 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
(x) Jackhammers and Handheld Power 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% 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 AND WORK PRACTICE CONTROL METHODS	REQUIRED RESPIRATORY PROTECTION AND MINIMUM ASSIGNED PROTECTION FACTOR (APF)	
		≤ 4 hours/shift	> 4 hours/shift
(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 grinder 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% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism:		
	<ul style="list-style-type: none"> When used outdoors 	None	None
	<ul style="list-style-type: none"> When used indoors or in an enclosed area 	None	APF 10
(xiii) Small Drivable Milling Machine	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

EQUIPMENT/TASK	TABLE 1 ENGINEERING AND WORK PRACTICE CONTROL METHODS	REQUIRED RESPIRATORY PROTECTION AND MINIMUM ASSIGNED PROTECTION FACTOR (APF)	
		≤ 4 hours/shift	> 4 hours/shift
(xiv) Walk-behind Milling machines and Floor Grinder	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% 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
(xv) Crushing Machine	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
(xvi) Heavy Equipment and Utility Vehicles Used to abrade Or fracture silica Containing Materials (i.e. Hoe-ramming, Rock ripping)	Operate equipment from within an enclosed cab or 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
(xvii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demo, abrading, fracture of silica-containing material.	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