Mechanical Contractors Association MCAA of America

Safety Bulletin

Provided as a service of MCAA's Safety Excellence Initiative

Subject: OSHA's New Rule on Respirable Crystalline Silica

Introduction

On March 25, 2016, the Occupational Safety and Health Administration published a final rule on Respirable Crystalline Silica. The rule affects construction, general, and maritime industries.

Key Dates

June 23, 2016 – The new standard becomes effective

June 23, 2017 – The one-year-old standard becomes enforceable in construction

June 23, 2018 – The two-year-old standard becomes enforceable in general industry

Key Provisions

The new standard:

- Reduces the Permissible Exposure Limit (PEL) by 80% from 250 ug/m^3 to 50 ug/m^3.
- Establishes an Action Level (AL) of 25 ug/m^3.
- Requires affected employers to use engineering controls to limit exposures.
- Requires respiratory protection when engineering controls are ineffective.
- Requires affected employers to develop written exposure control plans.
- Requires affected employers to train affected workers on the risks associated with silica and how they can limit their exposures.
- Requires affected employers to provide medical exams to highly exposed workers.

More…

For additional information about this topic or to learn more about MCAA's Safety Excellence Initiative, contact Pete Chaney at 301-869-5800 or pchaney@mcaa.org.

Summary of OSHA's Respirable Crystalline Silica Standard

The following summary of OSHA's Respirable Crystalline Silica Standard is provided so that members can obtain a cursory understanding of what will be required to comply with the new standard. Some important details have been omitted from the summary. Please be sure to read the actual standard in its entirety while developing your company's respirable crystalline silica policies, procedures, exposure control plans, training programs, and materials.

29 CFR 1926.1153 Respirable Crystalline Silica

Specified Exposure Control Methods:

- Affected employers will have to control worker exposure to silica by implementing the engineering controls established in *Table 1* of the standard (A copy of *Table 1* is in the addendum at the end of this bulletin), or by using the alternative exposure control methods described in the standard.

- When using *Table 1* - For indoor or enclosed areas employers must provide a means of exhaust to minimize the accumulation of visible airborne dust.

- When using *Table 1* - For wet methods, employers must ensure that water flow rates are sufficient to minimize release of visible dust.

- When using *Table 1* – When a worker performs more than one *Table 1* task during a shift, those tasks together exceed four hours, and respiratory protection is required, the employer must ensure that the affected worker uses the level of respiratory protection that is specified for more than four hours per shift.

Alternative Exposure Control Methods:

- When tasks are not listed in *Table 1* or when the requirements in *Table 1* can't be met, employers must use alternative exposure control methods for worker protection.

- Employers must ensure that no worker is exposed to an airborne concentration of respirable crystalline silica that exceeds 50 ug/m^3 (50 micrograms of respirable crystalline silica per cubic meter of air space – {PEL}) based on an 8-hour time weighted average (TWA).

- Employers must perform exposure assessments for each employee who could reasonably be expected to be exposed to respirable crystalline silica at or above 25 ug/m^3 (25 micrograms of respirable crystalline silica per cubic meter of air space – {AL}) based on an 8-hour time weighted average (TWA) using either:

- Any combination of air monitoring and objective data that would accurately characterize worker exposure to respirable crystalline silica; or

- Initial monitoring to assess the 8-hour TWA based on one or more breathing zone air samples.

- When initial monitoring indicates that worker exposure is below the AL employers may discontinue monitoring.

- When initial monitoring indicates that workers are exposed above the AL, but below the PEL, employers must repeat monitoring within 6 months of the most recent monitoring.

- When initial monitoring indicates that workers are exposed above the PEL employers must repeat monitoring within 3 months of the most recent monitoring.

- When the most recent monitoring (not initial monitoring) indicates that worker exposure is below the AL employers must repeat the monitoring every 6 months until two consecutive measurements taken seven or more days apart are below the AL.

    - When both measurements are below the AL employers may discontinue that monitoring.

- Employers must reassess worker exposure whenever a change in production, process, control equipment, personnel, work practices, or any other reason that becomes apparent could change exposures to measure at or above the AL.

- Employers must ensure that all samples taken to satisfy monitoring requirements are evaluated by a qualified laboratory that performs the analyses in accordance with the procedures specified in Appendix A of the standard.

- Within five work days after the exposure assessment employers must notify each affected worker about the results of the assessment either individually in writing, or by posting.

    - When exposure assessment results show that workers are exposed above the PEL employers must include in the written results a description of the action being taken to reduce exposures below the PEL.

- Employers must provide affected workers or their designated representatives an opportunity to observe any monitoring.

    - When observation requires use of protective clothing or equipment, employers must provide the clothing and/or equipment, and ensure its use.

- Unless the controls are infeasible, employers must establish engineering and work practice controls to reduce and maintain exposures at or below the PEL.

- When the controls are feasible, but inefficient, employers must continue to use them to reduce exposure, but also implement the use of suitable respiratory protection.

Respiratory Protection:

- When respiratory protection is required employers must provide affected workers with an appropriate respirator and ensure compliance with all applicable parts of OSHA standard *29 CFR 1910.134 (Respiratory Protection)*.
- Respiratory protection is required where specified in *Table 1.*
- Respiratory protection is required for tasks not listed in *Table 1,* and where affected employers do not fully and properly implement engineering controls, work practices, and respiratory protection described in *Table 1* as follows:
  - Where exposure exceeds the PEL during the establishment of engineering and work practice controls;
  - Where exposure exceeds the PEL during maintenance or repair tasks performed where engineering and work practice controls are not feasible; and
  - When engineering and work practice controls are insufficient to reduce exposures at or below the PEL.

Housekeeping:

- Employers must not allow dry sweeping or dry brushing where it could contribute to worker exposures, unless other methods that minimize the likelihood of exposure are not feasible.
- Employers must not allow the use of compressed air to clean clothing or surfaces where it could contribute to worker exposures, unless a ventilation system that effectively captures the dust cloud is used, or no alternative method is feasible.

Written Exposure Control Plan:

- Employers must establish a written exposure control plan that includes at least the following:
  - A description of the tasks in the workplace that involve respirable crystalline silica;
  - A description of engineering controls, work practice controls, and respiratory protection used to limit worker exposure for each task;

- A description of the housekeeping measures used to limit worker exposure; and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of workers exposed and their level of exposure, including exposures generated by others on the jobsite.

- Employers must review and evaluate the effectiveness of written exposure control plans at least annually, and update them as necessary.
- Employers must make the written plan readily accessible upon request to each affected worker and their designated representatives.
- Employers must designate a competent person to make frequent and regular inspections of jobsites, materials, and equipment to implement the plan.

Medical Surveillance:

- Employers must make medical surveillance available at no cost to each affected worker who will be required to use a respirator for more than 30 days per year.
- Employers must ensure that medical examinations are performed by a suitable physician or other licensed health care professional.
- Employers must make an initial baseline medical examination available within 30 days after initial assignment, unless the affected worker has received a suitable medical examination within the past 3 years.
- The baseline medical examination must include:
  - Medical and work history emphasizing past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system;
  - History of respiratory system dysfunction, including signs and symptoms of respiratory disease;
  - History of tuberculosis;
  - History of smoking/current smoking status;
  - A physical examination with special emphasis on the respiratory system;
  - A suitable chest X-ray that meets the specifications described in the standard;
  - A pulmonary function test that meets the specifications described in the standard;
  - Testing for latent tuberculosis infection; and

- Any other tests deemed appropriate by the physician or licensed healthcare professional.

- Employers must make periodic medical examinations available to affected workers at least every 3 years, or more frequently if recommended by the physician or licensed health care professional.

- Employers must ensure that the examining physician or licensed health care professional has a copy of the standard, and must provide that person with the following:

  - A description of the affected worker's former, current, and anticipated duties pertaining to occupational exposure to respirable crystalline silica;

  - The affected worker's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;

  - A description of any personal protective equipment used, or to be used by the affected worker, including when and how long the worker has used, or will use that equipment; and

  - Information from records of employment-related medical examinations previously provided to the worker and currently within the control of the employer.

- Employers must ensure that the physician or licensed health care provider explains the results of the medical examination to the affected worker and provides the worker with a written medical report within 30 days of each medical examination performed.

- The written medical report must include:

  - A statement indicating the results of the medical examination, including any medical conditions that would place the worker at increased risk of material impairment to health from exposure to respirable crystalline silica;

  - A statement indicating any medical conditions that require further evaluation or treatment;

  - Any recommended limitations on the worker's use of respirators;

  - Any recommended limitations on the worker's exposure to respirable crystalline silica; and

  - A statement that the worker should be examined by a specialist if the results of the chest X-ray make it necessary, or if the physician or licensed health care professional deem it appropriate.

- Employers must obtain a written medical opinion from the physician or licensed health care professional within 30 days of the medical examination.
- The written medical opinion must include:
    - The date of the examination;
    - A statement that the examination has met the requirements of the standard; and
    - Any recommended limitations on the worker's use of respirators.
- If the affected worker provides written authorization, the written medical opinion must also include:
    - Any recommended limitations on the worker's exposure to respirable crystalline silica;
    - A statement that the worker should be examined by a specialist if the results of the chest X-ray make it necessary, or if the physician or licensed health care professional deem it appropriate.
- Employers must ensure that each affected worker receives a copy of the written medical opinion within 30 days of each medical examination performed.
- Where the physician or licensed health care professional's written medical opinion indicates that a worker should be examined by a specialist, the employer must make the examination available within 30 days of receiving the written medical opinion.
- Each affected employer must ensure that the specialist is provided with the same information that affected employers are required to provide to the original physician or licensed health care professional.
- Each affected employer must ensure that the specialist explains the results of the medical examination to the affected worker and provides the worker with a written medical report within 30 days of the examination.
- The written medical report must include:
    - A statement indicating the results of the medical examination, including any medical conditions that would place the worker at increased risk of material impairment to health from exposure to respirable crystalline silica;
    - A statement indicating any medical conditions that require further evaluation or treatment;

- Any recommended limitations on the worker's use of respirators; and
- Any recommended limitations on the worker's exposure to respirable crystalline silica.

- Employers must obtain a written medical opinion from the specialist within 30 days of the medical examination.
- The written medical opinion must include:
  - The date of the examination; and
  - Any recommended limitations on the worker's use of respirators.
- If the affected worker provides written authorization, the written medical opinion must also include any recommended limitations on the worker's exposure to respirable crystalline silica.

Communication of Respirable Crystalline Silica Hazards to Workers:

- Employers must include respirable crystalline silica in their written hazard communication program required by 29 CFR 1910.1200 (*Hazard Communication*).
- Affected employers must ensure that the following hazards are addressed in the program:
  - Cancer;
  - Lung effects;
  - Immune system effects; and
  - Kidney effects.
- Employers must ensure that affected workers can demonstrate knowledge and understanding of the following:
  - Health hazards associated with exposure to respirable crystalline silica;
  - Specific tasks in the workplace that could result in exposure to respirable crystalline silica;
  - Specific measures implemented by the employer to protect workers from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;
  - The contents of the standard;

- The identity of the designated competent person; and
- The purpose and description of the medical surveillance program.

- Employers must make a copy of the standard available without cost to each affected worker.

Recordkeeping:

- Employers must create and maintain a record of all exposure assessments. The record must include:
  - Date of measurement for each sample taken;
  - Task monitored;
  - Sampling and analytical methods used;
  - Number, duration, and results of samples taken;
  - Identity of the laboratory that performed the analysis;
  - Types of personal protective equipment, such as respirators, worn by affected workers who were monitored; and
  - Name, social security number, and job classification of all workers represented by the monitoring, indicating which workers were actually monitored.
- Employers must ensure that exposure records are maintained and made available as required by 29 CFR 1910.1020 (*Access to Employee Exposure and Medical Records*).
- Employers must create and maintain a record of all objective data relied upon to comply with the standard. The record must include the following:
  - Crystalline silica containing material in question;
  - Source of the objective data;
  - Testing protocol and results of testing;
  - Description of the process, task, activity, or exposures on which the objective data were based; and
  - Any other relevant data regarding the process, task, activity, or exposures on which the objective data were based.

- Employers must ensure that objective data are maintained and made available as required by 29 CFR 1910.1020 (*Access to Employee Exposure and Medical Records)*.

- Employers must create and maintain a record of each affected worker covered by the medical surveillance requirements. The record must include the following:

    - Name and social security number of affected worker;

    - A copy of the physician or licensed health care professional's written medical opinions; and

    - A copy of the information provided to the original physician or licensed health care professional and, if applicable the specialist.

- Employers must ensure that medical records are maintained and made available as required by 29 CFR 1910.1020 (*Access to Employee Exposure and Medical Records)*.

Addendum –

Table 1 of 29 CFR 1926.1153… Respirable Crystalline Silica

The table provides exposure control methods for a number of specified tasks/equipment that could produce respirable crystalline silica. When Table 1 is properly used it can replace the more traditional methods of exposure control identified through initial exposure determination air monitoring.

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

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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
(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

More…

Equipment / Task	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 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

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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	None None	None None

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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.	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

More…

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 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	None	None

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
	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.	None	None
	– When used indoors or in an enclosed area.	None	APF 10

More…

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 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	None None

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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.	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

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(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

More…

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and 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. OR When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None None	None None