

Occupational Exposure to Silica; Final Rule

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Construction Industry 29 CFR 1926.1153

On March 25, 2016, OSHA (Occupational Safety and Health Administration) published two new final rules in the *Federal Register*, 81 *Fed. Reg.* 16285-16890 (2016) regulating exposure to respirable crystalline silica: one for general industry and maritime and the other for the construction industry. **This regulation update discusses the final rule for the construction industry.** For a brief synopsis of this regulation see [Technical Data Bulletin 242](#).

This summary of the OSHA standard for occupational exposure to silica in the construction industry was prepared by 3M Personal Safety Division (PSD) emphasis on the respiratory protection aspects of the standard. It does not represent an official or legal or necessarily complete interpretation of the standard. If specific questions rise, the standard itself should be reviewed and relied on rather than this summary. A copy of this standard can be obtained at <https://www.osha.gov/laws-regs/federalregister/2016-03-25-1>.

On Feb. 4, 2020, OSHA issued a National Emphasis Program (NEP) – Respirable Crystalline Silica. This Directive ([CPL 03-00-023](#)) was followed by OSHA Instruction [CPL 02-02-80](#), Inspection Procedures for the Respirable Crystalline Silica Standards, June 25, 2020.

This Regulatory update will cover all three OSHA documents.

Silica

Silica is a compound composed of the elements silicon and oxygen (chemical formula SiO₂). Silica has a molecular weight of 60.08, and exists in crystalline and amorphous states, both in the natural environment and as produced during manufacturing or other processes. These substances are odorless solids, have no vapor pressure, and create non-explosive dusts when particles are suspended in air. Quartz is the most common form of crystalline silica and accounts for almost 12% by volume of the earth's crust. Cristobalite is a form of crystalline silica that is formed at high temperatures (≤1470 °C). High temperature furnaces are often lined with bricks that contain quartz. When subjected to prolonged high temperatures, this quartz can convert to cristobalite. Tridymite is another material formed at high temperatures (≤870 °C) that is associated with volcanic activity.

According to OSHA, the evidence in the record for this rulemaking indicates that workers exposed to respirable crystalline silica are at increased risk of developing silicosis and other nonmalignant respiratory diseases, lung cancer, and kidney disease.

Dates (29 CFR 1926.1153 (k))

Effective date: June 23, 2016.

According to OSHA the effective date is set to allow sufficient time (90 days) for employers to obtain the standard, read and understand its requirements, and undertake the necessary planning and preparation for compliance.

Start-up Dates

Note: The dates to be in compliance with these Standard provisions have already passed at the time of the Regulatory Update (August 31, 2021).

Standard provision	Date	Time period
All obligations of 29 CFR 1926.1153, except requirements for methods of sample analysis in paragraph (d)(2)(v)	June 23, 2017	Allows 1 year after the effective date to come into compliance with all obligations other than the requirements for methods for sample analysis
Requirements for methods of sample analysis in paragraph (d)(2)(v)	June 23, 2018	Allows 2 years after the effective date to allow laboratories to come into compliance with respect to methods of sample analysis so the supply of laboratories is sufficient for conducting the required analysis

Scope and application (29 CFR 1926.1153 (a))

This section (*i.e.* 1926.1153) applies to all occupational exposures to respirable crystalline silica in construction work.

Exception: This construction rule does not apply where employee exposures will remain below 25 µg/m³ as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

Definitions (29 CFR 1926.1153 (b))

The following is a partial list of the definitions used in the respirable crystalline silica standard. These definitions were included because they are used in this document.

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

Competent 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. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in paragraph (g) of this section (*i.e.* 29 CFR 1926.1153).

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

Objective data means 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.

Physician or other licensed health care professional [PLHCP] means an individual whose legally permitted scope of practice (*i.e.* license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by paragraph (h) of this section (*i.e.* 29 CFR 1926.1153).

Respirable crystalline silica means 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) 708:1995: Air Quality—Particle Size Fraction Definitions for Health-Related Sampling.

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

Specified exposure control methods (29 CFR 1926.1153 (c))

This OSHA standard requires employers engaged in construction to control their employees' exposure to respirable crystalline silica. The standard includes two approaches for controlling these exposures. One approach, described in paragraph (c) is the specified exposure control method. The second approach is described in paragraph (d) "Alternative exposure control methods."

Paragraph (c) includes "Table 1: Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica," a table identifying common construction tasks known, according to OSHA, to generate high exposures to respirable crystalline silica and specifying appropriate and effective engineering controls, work practices, and respiratory protection for each identified task. For each employee engaged in a task identified on Table 1, the employer is required to **fully and properly** [3M's emphasis] implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1, unless the employer assesses and limits the exposure of the employee to respirable crystalline silica in accordance with paragraph (d) of the standard for construction.

If the employer fully and properly implements the engineering controls, work practices, and respiratory protection specified for each employee engaged in a task identified on Table 1, the employer is not required to conduct exposure assessments or otherwise comply with the PEL for those employees.

According to OSHA, Table 1 identifies 18 common construction equipment/tasks known to generate high exposures to respirable crystalline silica. For each equipment/task identified, Table 1 specifies appropriate and effective engineering and work practice control methods. Some entries contain multiple engineering controls and work practices. In those instances, OSHA has determined that the specified combination of engineering controls and work practices is necessary for reducing exposures and requires employers to implement all the listed engineering controls and work practices in order to be in compliance. Some entries contain multiple compliance options denoted with an "OR" (e.g., (c)(1)(ix), (c)(1)(x), (c)(1)(xii), (c)(1)(xiii), (c)(1)(xv), and (c)(1)(xviii) of the standard for construction). For those entries, OSHA has determined that more than one control strategy could effectively reduce exposures and permits the employer to decide which option could be best implemented on the worksite.

In addition to engineering controls and work practices, Table 1 also specifies respiratory protection for those entries where OSHA has determined from its analysis of technological feasibility that respiratory protection is needed to ensure employees are protected from exposures to respirable crystalline silica. These respirator requirements are divided by task duration (i.e., "less than or equal to four-hours-per-shift" and "greater than four-hours-per-shift." See [Technical Data Bulletin #210](#) for a copy of Table 1 and a more detailed explanation of tasks and recommended personal protective equipment.

According to OSHA, the phrasing in paragraph (c) "...employees engaged in a task identified in Table 1" is intended to include not only the equipment operators, but also laborers and other employees who are assisting with the task or have some responsibility for the completion of the task, even if they are not directly operating the equipment. It is not OSHA's intent, however, for all employees in the vicinity of a listed task to be considered "engaged in the task." To protect other employees in the vicinity of a listed task, the employer must account for the potential exposure of these employees in its written exposure control plan (29 CFR 1926.1153 (g)(1)(iv)).

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

- 1) For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
- 2) For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;
- 3) For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
 - a) Is maintained as free as practicable from settled dust;
 - b) Has door seals and closing mechanisms that work properly;
 - c) Has gaskets and seals that are in good condition and working properly;
 - d) Is under positive pressure maintained through continuous delivery of fresh air;

- e) Has intake air that is filtered through a filter that is 95% efficient in the 0.3–10.0 μm range (e.g., MERV–16 or better); and
- f) Has heating and cooling capabilities.

Where an employee performs more than one task in Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift. Tasks from Table 1 requiring respiratory protection are listed in the annex to this Regulation Update.

Alternative exposure control methods (29 CFR 1926.1153 (d))

If the employer does not follow Table 1 for employees engaged in identified tasks or if the respirable crystalline silica-generating task is not identified in Table 1, the employer must assess and limit the exposure of employees in accordance with paragraph (d) of the standard for construction. Paragraph (d) of the standard for construction imposes requirements similar to OSHA's traditional approach of requiring employers to demonstrate compliance with a PEL through required exposure assessments and controlling employee exposures through the use of feasible engineering controls and work practices.

Permissible Exposure Limit (PEL)

The employer shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 $\mu\text{g}/\text{m}^3$, calculated as an 8-hour TWA.

The PEL prior to this rulemaking (2016) was approximately 250 $\mu\text{g}/\text{m}^3$ for construction and was lowered to 50 $\mu\text{g}/\text{m}^3$ of respirable crystalline silica. This makes the 2016 PEL approximately 80% lower than the previous PEL. However, OSHA considers the level of risk remaining at the PEL of 50 $\mu\text{g}/\text{m}^3$ to be significant. OSHA expects the ancillary provisions (e.g., medical surveillance and training) of the standard to reduce this risk below what engineering and work practice controls alone can achieve.

Exposure assessment general

The employer shall assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level in accordance with either the performance option or the scheduled monitoring option described below.

Performance option

For the performance option, the employer must assess the 8-hour TWA exposure for each employee based on any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica.

Scheduled monitoring option

For the scheduled monitoring option, the employer must perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone (PBZ) air samples that reflect the exposures of employees on each shift, for each job classification, in each work area. Where several employees perform the same job tasks on the same shift and in the same work area, the employer may sample a representative fraction of these employees to meet this requirement. For representative sampling, OSHA states the employer must sample the employee(s) who are expected to have the highest exposure to respirable crystalline silica.

Under the scheduled monitoring option, requirements for periodic monitoring depend on the results of initial and subsequent monitoring.

Results of Initial Monitoring	Periodic Monitoring Requirement
Employee exposures < 25 µg/m ³	No further monitoring is required
Employee exposures ≥25 µg/m ³ and ≤ 50 µg/m ³	Repeat monitoring within 6 months of the most recent monitoring
Employee exposure > 50 µg/m ³	Repeat monitoring within 3 months of the most recent monitoring

Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the action level, the employer shall repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the action level, at which time the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring, except as otherwise provided in paragraph (d)(2)(iv) of 29 CFR 1926.1153.

Reassessment of exposures

Employers must 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.

Methods of sample analysis

Employers must ensure that the laboratory performing the sample analysis evaluates all samples using the procedures specified in one of the following analytical methods: OSHA ID-142; NMAM 7500; NMAM 7602; NMAM 7603; MSHA P-2; or MSHA P-7. **Appendix A to § 1926.1153—Methods of Sample Analysis** contains additional information and specifies the procedures for analyzing air samples for respirable crystalline silica, as well as the quality control procedures that employers must ensure that laboratories use when performing an analysis required under this part of the rule.

Methods of compliance

Engineering and work practice controls

The employer shall use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection that complies with the requirements of paragraph (e) Respiratory Protection of 29 CFR 1926.1153.

Abrasive blasting

In addition to the requirements of paragraph (d)(3)(i) (Engineering and work practice controls) of 29 CFR 1926.1153, the employer shall comply with other OSHA standards, when applicable, such as 29 CFR 1926.57 (Ventilation), where abrasive blasting is conducted using crystalline silica-containing blasting agents, or where abrasive blasting is conducted on substrates that contain crystalline silica.

According to OSHA, this means:

- 1) Abrasive blasting operators must, separate from this rule, be provided with and wear the respiratory protection required by 29 CFR 1926.57(f), and
- 2) employees helping with the operation, or who otherwise must be in the vicinity of the operation, must also be adequately protected by a combination of engineering controls, work practices, and respirators.

OSHA points out that this construction standard also takes respirator use into account by cross-referencing the specific respirator requirements already in place for abrasive blasting. Employers are also required to comply with the requirements of 29 CFR 1910.134 whenever respiratory protection is required by this standard. Under 29 CFR 1910.134, the employer is required to select and provide an appropriate respirator based on the respiratory hazards to which the employee is exposed and is required to use the APF table at 29 CFR 1910.134(d)(3)(i)(A). This includes note four of the APF table, which requires the employer to have evidence to support an APF of 1000 for helmet/hood respirators. In addition, paragraph (d)(2) of the standard for construction requires employers to assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level, which will provide employers with information to make appropriate respirator selection decisions. OSHA concludes that these requirements, including the referenced provisions in other OSHA standards, will adequately protect employees from exposures to respirable crystalline silica during abrasive blasting.

Respiratory protection (29 CFR 1926.1153 (e))

General

Where respiratory protection is required by this standard, the employer must provide each employee an appropriate respirator that complies with the requirements of this paragraph and 29 CFR 1910.134. (See Annex for information on 3M Suggested Respirators).

Respiratory protection is required:

- 1) Where specified by Table 1 of paragraph (c) of 29 CFR 1926.1153; or
- 2) For tasks not listed in Table 1, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1:
 - a) Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls;
 - b) Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible; and
 - c) During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.

Respiratory protection program

Where respirator use is required by 29 CFR 1926.1153(e), the employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134.

Specified exposure control methods

For the tasks listed in Table 1 in paragraph (c) of 29 CFR 1926.1153, if the employer fully and properly implements the engineering controls, work practices, and respiratory protection described in Table 1, the employer shall be considered to be in compliance with paragraph 29 CFR 1926.1153(e)(1) and the requirements for selection of respirators in 29 CFR 1910.134(d)(1)(iii) and (d)(3) with regard to exposure to respirable crystalline silica.

Housekeeping (29 CFR 1926.1153 (f))

Paragraph (f) of the standard for construction requires employers to adhere to housekeeping practices. It forbids dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible. This standard also prevents the use of compressed air to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica unless:

- The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or
- No alternative method is feasible.

Written exposure control plan (29 CFR 1926.1153 (g))

Paragraph (g) of the standard for construction sets forth the requirements for written exposure control plans, which describe methods used to identify and control workplace exposures, such as engineering controls, work practices, and housekeeping measures. OSHA believes these requirements for the written exposure control plan are performance-based to allow employers to tailor written exposure control plans to their particular worksites.

The requirements for the written exposure control plan are:

- 1) The employer is required to establish and implement a written exposure control plan that contains at least the following elements:
 - a) A description of the tasks in the workplace that involve exposure to respirable crystalline silica;
 - b) A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task;
 - c) A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and
 - d) 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 or sole proprietors.
- 2) The employer shall review and evaluate the effectiveness of the written exposure control plan at least annually and update it as necessary.
- 3) The employer shall make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by 29 CFR 1910.1153, their designated representatives, the Assistant Secretary of Labor for Occupational Safety and Health or designee and the Director of the National Institute for Occupational Safety and Health (NIOSH).
- 4) The employer shall designate a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan.

Medical surveillance (29 CFR 1926.1153 (h))

The paragraph specifies which employees must be offered medical surveillance, as well as the frequency and content of medical examinations. It also sets forth the information that the physician or other licensed health care professional (PLHCP) is to provide to the employee and employer. Further clarification of medical surveillance was included in OSHA Instruction Directive [CPL 02-02-080](#).

3M Personal Safety Division

The purpose of medical surveillance for respirable crystalline silica is, where reasonably possible,

- 1) to identify respirable crystalline silica-related adverse health effects so that appropriate intervention measures can be taken;
- 2) to determine if an employee can be exposed to respirable crystalline silica in his or her workplace without increased risk of experiencing adverse health effects, or in other words, to determine if an employee has any condition, regardless of the cause, that might make him or her more sensitive to respirable crystalline silica exposure; and
- 3) to determine the employee's fitness to use respirators.*

The employer is required to 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 section to use a respirator for 30 or more days per year. The required medical examinations and procedures must be performed by a PLHCP as defined earlier.

Initial examinations

An initial (baseline) medical examination is required within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of 29 CFR 1926.1153(h) within the last three years. The examination shall consist of:

- A medical and work history, with emphasis on: past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;
- A physical examination with special emphasis on the respiratory system;
- A chest X-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader;
- 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;
- Testing for latent tuberculosis infection; and
- Any other tests deemed appropriate by the PLHCP.

Periodic examinations

Periodic medical examinations that include everything listed under initial examination except for testing for latent tuberculosis infection at least every three years, or more frequently if recommended by the PLHCP.

Information provided to the PLHCP

The employer is required to ensure that the examining PLHCP has a copy of this standard (29 CFR 1926.1153), and shall provide the PLHCP with the following information:

- A description of the employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to respirable crystalline silica;
- The employee'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 employee, including when and for how long the employee has used or will use that equipment; and
- Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

PLHCP's written medical report for the employee

The employer is required to 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 shall 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; and
- A statement that the employee should be examined by a specialist if the chest X-ray required above is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

PLHCP's written medical opinion for the employer

- The employer is required to obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following:
 - The date of the examination;
 - A statement that the examination has met the requirements of this section; and
 - Any recommended limitations on the employee's use of respirators.*
- If the employee provides written authorization, the written opinion shall also contain either or both of the following:
 - Any recommended limitations on the employee's exposure to respirable crystalline silica;
 - A statement that the employee should be examined by a specialist (pursuant to paragraph (h)(7) of 29 CFR 1926.1153) if the chest X-ray required above is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.
- The employer shall ensure that each employee receives a copy of the written medical opinion described under *PLHCP's written medical opinion* for the employer within 30 days of each medical examination performed.

Additional examinations

- If the PLHCP's written medical opinion indicates that an employee should be examined by a specialist, the employer shall make available a medical examination by a specialist within 30 days after receiving the PLHCP's written opinion.
- The employer shall ensure that the examining specialist is provided with all the information that the employer is obligated to provide to the PLHCP under *Information provided to the PLHCP*.
- The employer shall 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 must include: 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, and any recommended limitations on the employee's exposure to respirable crystalline silica.
- The employer shall obtain a written opinion from the specialist within 30 days of the medical examination. The written opinion shall include: the date of the examination, any recommended limitations on the employee's use of respirators and any recommended limitations on the employee's exposure to respirable crystalline silica.

*By incorporation of 29 CFR 1910.134, the medical evaluation requirements of "134" must be met in addition to the medical surveillance requirements above.

Communication of respirable silica hazards to employees (29 CFR 1926.1153 (i))

Hazard communication

Paragraph (i) of the standard for construction sets forth requirements intended to ensure that the dangers of respirable crystalline silica exposure are communicated to employees. It requires the employer to:

- 1) include respirable crystalline silica in the program established to comply with the hazard communication standard (HCS) (29 CFR 1910.1200);
- 2) 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 the HCS and the provisions on employee information and training (contained in paragraph (i)(2) of the standard for construction), and
- 3) ensure that at least the following hazards are addressed: cancer, lung effects, immune system effects, and kidney effects.

Employee information and training

The employer shall ensure that each employee covered by this standard can demonstrate knowledge and understanding of at least the following:

- The 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 the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;
- The contents of 29 CFR 1926.1153;
- The identity of the competent person designated by the employer; and
- The purpose and a description of the medical surveillance program.

The employer shall make a copy of 29 CFR 1926.1153 readily available without cost to each employee covered by this rule.

Recordkeeping (29 CFR 1926.1153 (j))

Paragraph (j) of the standard for construction requires employers to make and maintain air monitoring data, objective data, and medical surveillance records. These records must be maintained and made available in accordance with 29 CFR 1910.1020, Access to employee exposure and medical records.

Air monitoring data

These records include all exposure measurements taken to assess employee exposure to respirable crystalline silica and must include:

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

Objective data

These records include all objective data relied upon to meet the requirements of this rule and includes:

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

Medical surveillance

These records include an accurate record for each employee covered by medical surveillance and must include:

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

Annex Respiratory Protection

Equipment/Tasks from Table 1 of OSHA Respirable Crystalline Silica Construction Standard Requiring Respiratory Protection Included in the Specified Exposure Control Methods

This table identifies the minimum required respirator assigned protection factor for the task. OSHA states, however, this is only the minimum protection factor required for the respirator, and employers have the flexibility to provide a more protective respirator to those employees who request one or require a more protective respirator based on the employer's evaluation of the worksite.

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).	<ul style="list-style-type: none"> • 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	APF 10
(ii) Handheld power saws (any blade diameter).	<ul style="list-style-type: none"> • 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. 	APF 10	APF 10
(iv) Walk-behind saws	<ul style="list-style-type: none"> • 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. 	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
(viii) Dowel drilling rigs for concrete	<p>For tasks performed outdoors only:</p> <ul style="list-style-type: none"> 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
(x) Jackhammers and handheld powered chipping tools	<ul style="list-style-type: none"> Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. OR Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. 	<p>When used outdoors: None</p> <p>When used indoors or in an enclosed area: APF 10</p>	APF 10
(xi) Handheld grinders for mortar removal (<i>i.e.</i> , tuck-pointing).	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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. 	None	<p>When used outdoors: None</p> <p>When used indoors or in an enclosed area: APF 10</p>

Examples of 3M Respirators Listed by APF

Respirator APF from 29 CFR 1910.134	Respirator Type	3M Suggested Respirators
10	Half facepiece air purifying respirator (Includes filtering facepieces and elastomeric half facepiece respirators)	8210, 8511, 8271 or 9205+ Particulate respirators (filtering facepieces) 6000, 6500 or 7500 Series half facepiece respirators with 2071 or 2091 filters (elastomeric half facepiece)
25	Powered air-purifying respirators (PAPR) with loose-fitting facepiece	TR-300+ PAPR with M-300 headgear
50	Full facepiece air purifying respirators	6000 or FF-400 Series full facepiece respirator with 2071 or 2091 filters. Note that quantitative fit testing must be done to obtain the APF of 50.
	PAPR with elastomeric half facepiece.	6000 or 6500 Series half facepiece respirator, with BT-64 heavy duty breathing tube, TR-600 or TR-800 PAPR, and TR-6710N high efficiency filter
1000	PAPR with either full facepiece, hood or helmet	TR-300+, TR-600 or TR-800 PAPR with M-400 series helmet.
	Continuous flow supplied air respirator (SAR) with full facepiece, hood or helmet	Versaflo™ M-400 series helmet with BT-40 heavy duty breathing tube, and V-Series supplied air valve.

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3M PSD products are occupational use only.

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