

PART 2 – SILICA SPECIFICATION

2.1 FOR MASONRY GRINDING, CUTTING AND SAWING

A. Purpose

1. The purpose of this specification is to protect employees, the public, the environment and property from the detrimental affects of silica-containing dust generated from construction and restoration/maintenance activities.

B. Scope and Application

1. This specification applies to powered tools or equipment used to cut, grind, core or drill masonry or concrete materials.

C. Definitions

1. Masonry Material – For purposes of this specification includes, concrete block, brick, stones (natural and man-made), terra cotta tile, mortar and concrete made by mixing cement, and water with sand, and aggregate such as gravel or crushed stone. Material that is apparently stone-like in appearance and texture shall be presumed to be concrete or masonry material, unless otherwise indicated by evidence as presented by the employer.
2. NIOSH REL – The National Institute of Occupational Safety and Health Recommended Exposure Limit. For silica this is 0.05 milligrams per cubic meter (mg/c) averaged over a 10-hour time-weighted average.
3. OSHA PEL – The Occupational Safety and Health Administration’s Permissible Exposure Limit is expressed as per 1926.55 - Gases, vapors, fumes, dusts, and mists - by the equation:
$$\text{PEL} = 10 \text{ mg/ m}^3$$
$$\% \text{ silica} + 2$$
4. Powered tools or equipment – Tools in which the motive force that disrupts concrete or masonry materials is provided by a source other than human energy. Powered tools and equipment include those powered by electrical, combustion, hydraulic, chemical, or pneumatic energy.
5. Dust reduction system – Technology that utilizes the application of water or local exhaust ventilation to reduce airborne dust generated by the use of powered tools or equipment. Local exhaust ventilation may include vacuum systems, dust collection systems, and dust exhaust systems.

D. Controls

1. In all cases, engineering and/or work-practice or administrative controls that reduce dust at the source where it is being generated shall be the control of choice. In those instances where such controls cannot be used – even temporarily — employees shall be protected with respirators that are used as part of a respiratory protection program. Additionally, the contractor must document how they determined that engineering and/or work practice or administrative controls could not be used.

a. Safety and Effectiveness of Dust Control Systems

- 1) Procedures shall be implemented to ensure that dust reduction systems maintain their effectiveness for dust reduction throughout the work shift.
- 2) Dust reduction systems shall be installed, operated, and maintained in accordance with manufacturer recommendations when there are such.

- 3) When electrical tools are used with water as a dust reduction system, it shall be done in accordance with applicable requirements of electrical safety.

b. Dust Collection/Management

- 1) Dust shall be contained and disposed of in bags that can effectively hold dust without breaking.
- 2) Work surfaces and clothing shall be cleaned with vacuums and not by dry sweeping or the use of compressed air.
- 3) Respirators shall be worn when changing out bags or handling dust.

E. Evaluating the Effectiveness of Controls

1. The primary purpose of exposure monitoring and site inspections for the presence of dust is to ensure that engineering controls are effective in reducing silica dust generation. When personal air monitoring results are elevated or when there is visible dust, the contractor must intervene to determine the cause of the problem and fix it.
2. As soon as possible after the beginning of cutting or grinding tasks, the contractor shall conduct personal air monitoring of workers performing the cutting/grinding tasks. An industrial hygienist shall perform the monitoring and must be consulted prior to the execution of work. If personal air monitoring results indicate that the exposures are above the NIOSH Recommended Exposure Limits (REL) for silica, the contractor must ensure that the controls are functioning and being used properly. In all cases when the REL is exceeded, workers shall be provided with proper respiratory protection.
3. Following modification of controls as described above, the contractor shall conduct personal air monitoring to verify the effectiveness of those modifications in reducing employee exposure to silica.
4. If the contractor has done similar work in the past, has conducted exposure monitoring, and has records of this, the results can be used as a preliminary means to evaluate the effectiveness of controls. It is important that the previous jobs where the monitoring was conducted be similar to the current job, and that the control used be the same, including the manufacturer and model of the vacuum used.
5. Periodic monitoring shall be performed to assure the effectiveness of controls over time.
6. The contractor shall conduct daily visual inspections of the site for the presence of visible dust during grinding and cutting tasks. The presence of such dust is a sign that the controls are not doing their job.

F. Training

1. Employee training. An employer whose operations include using powered tools or equipment to cut, grind, core, or drill concrete or masonry materials shall provide training on the following topics to all employees prior to their assignment to jobs or work areas where the employer will be conducting these operations that potentially expose them to silica-containing dusts:
 - a. The potential health hazards of overexposure to airborne dust generated from concrete and masonry materials, including silicosis, lung cancer, chronic obstructive lung disease (COPD) and decreased lung function.

- b. Methods used by the employer to control employee exposures to airborne dust from concrete and masonry materials, including wet cutting, local exhaust ventilation systems, and process isolation, as applicable.
 - c. Proper use and maintenance of dust reduction systems, including the safe handling and disposal of waste materials collected in connection with their use.
 - d. The importance of good personal hygiene and housekeeping practices when working in proximity to dust from concrete and masonry materials including: not smoking tobacco products; appropriate methods of cleaning up before eating, and appropriate methods of cleaning clothes.
 - e. OSHA requirements including permissible exposure limits, requirements for engineering controls, and respirator protection program requirements.
2. Supervisor training. Prior to supervision of employees who will be cutting, grinding, drilling, or coring concrete or masonry materials, supervisory employees shall be trained on the following topics:
 - a. The information required to be provided by subsection above. Identification of tasks the employees will perform, which may result in employee exposure to concrete or masonry dust.
 - b. Procedures for implementation of the measures used by the employer to reduce the exposure to concrete or masonry dust.
 - c. Measures for verifying the effectiveness of controls.
 3. Periodic training. On jobs that last more than one year, the employer shall conduct the training required by this section at least annually.

G. Training Records

1. General Requirements: The contractor must maintain a record of all training required by this part within the preceding three (3) years for each person, who performs or directly supervises this specific job function (Masonry, Grinding, Cutting and Sawing). These training records must be maintained during the time that the person performs or supervises this job function (Masonry, Grinding, Cutting and Sawing). These training records must be kept for direct employees of the contractor as well as independent contractors, subcontractors and any other person who performs or directly supervises these job functions for the contractor.
2. Location of Records: The contractor must retain the training records required by this part to include all initial and recurrent training received within the preceding three (3) years for all persons performing or directly supervising this job function (Masonry, Grinding, Cutting and Sawing). Records may be maintained electronically or by other acceptable means. When the person ceases to perform or directly supervise this job function (Masonry, Grinding, Cutting and Sawing) the contractor must retain the training records for an additional ninety (90) days.
3. Contents of Records: Each training record must contain the following:
 - a. The individual's name;
 - b. The most recent training completion date;
 - c. A description, copy or reference to training materials used to meet training requirements;

d. The name of the person or organization providing the training.

H. Written Program

1. The contractor shall have a site-specific, written program that contains the following elements:
 - a. Introduction: Project description, location, scope and schedule of work.
 - b. Personnel: Project manager, person in charge of silica program.
 - c. Silica dust-emitting activities: Tasks, equipment, materials, work crew.
 - d. Engineering and work-practice controls: Type of control, use and maintenance procedures and how effectiveness will be verified including personal air monitoring data and schedules for air monitoring.
 - e. Respiratory Protection Program.
 - f. Schedule: Timetable for implementing compliance program.
 - g. Hygiene procedures: Protective clothing (beside respirators) and equipment, housekeeping, hand washing stations.

PART 3 - SOIL MANAGEMENT

3.1 EXCAVATED SOIL MANAGEMENT

- A. The Contractor shall remove, recycle or dispose of all excess soil. Testing indicates that a portion of the soil, as illustrated on the Estimated Extent of Cobalt plan, does not meet the PADEP Clean Fill Concentration Limits and needs to be managed in accordance with the PADEP Management of Fill Policy, dated August 7, 2010.
- B. Excavated excess soil will be sampled and analyzed by the Contractor in order to obtain disposal approval at a landfill or recycling facility. Sampling and analysis of the excess soil will be at the Contractor's expense at no additional cost to the owner.
- C. All excess soil will be disposed off-site in a manner consistent with all applicable local, State, and Federal regulations. The disposal or recycling facility shall be approved by the Owner before the excess soil is transported off-site. The name of the proposed disposal or recycling facility is to be submitted prior to disposal. Disposal of the excess soil will be at the Contractor's expense at no additional cost to the owner.
- D. The Contractor must follow the recommendations concerning handling of excavated excess soil on site as presented in PADEP's Management of Fill Policy, dated August 7, 2010.

3.2 SPECIAL CONDITIONS FOR SOIL MANAGEMENT

- A. The following Special Conditions apply to all Work to be conducted in order to complete this project:
 1. The Contractor shall make all required notifications and take all necessary precautions to ensure against damage including but not limited to access roads, sidewalks and driveways, utilities and structures. Any damage to such items shall be repaired or replaced by the Contractor at no additional cost to the Owner.
 2. The use of burning at the Site for the disposal of refuse and debris will not be permitted.