



Sandblasting & Silica Exposure Control Plan

The purpose of this program is to inform interested persons, including employees, that EMA is complying with OSHA's Gases, Vapors, Fumes, Dusts, and Mists standard, Title 29 Code of Federal Regulations 1926.55 and other OSHA rules as needed to ensure that no employee is exposed to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists found in Appendix A of 29 CFR 1926.55. **This program deals with exposure to Crystalline Silica and hazards associated with sandblasting.**

To achieve compliance we must first implement all feasible administrative and engineering controls. However, when such controls are not feasible, we will use protective equipment or other protective measures to keep the exposure of employees to air contaminants within the limits prescribed in Appendix A of 29 CFR 1926.55. All equipment and technical measures used to achieve compliance will first be approved for each particular use by a competent industrial hygienist or other technically qualified person.

This program applies to all construction work (including alteration, repair, painting, and decorating) where one of our employees may be occupationally exposed to gases, vapors, fumes, dusts, and mists at concentrations above those specified in Appendix A of 29 CFR 1926.55.

Administrative Duties

This written safety program covers EMA's various work sites. The Project Manager is the program coordinator/manager and is responsible for its implementation. Copies of the written program may be obtained from the written safety and health manual or by contacting the corporate office.

Exposure assessment and monitoring

We conduct personal or area sampling for gases, vapors, fumes, dusts, and mists to measure worker exposures. Air sampling is needed to measure worker exposures and select appropriate engineering controls and respiratory protection. Where data is collected it must be retained to support negative exposure assessments.

We will perform air monitoring as needed to measure the effectiveness of controls.

Our Exposure Assessment and Monitoring Program is attached to this written program.

The current OSHA permissible exposure limit (PEL) for respirable dust containing crystalline silica (quartz) is measured by millions of particles per cubic foot (mppcf) and is calculated as:

$$\text{PEL} = (250 \text{ mppcf}) / (\% \text{ silica} + 5)$$

Note: PEL is an 8 hour time-weighted average (TWA).

Medical surveillance

Although we understand that medical examinations should always supplement effective gas, vapor, fume, dust, and mist monitoring and controls, and never substitute for them, we provide medical examinations for all workers who may be exposed to Crystalline Silica s at or above the respective PEL found in 29 CFR 1926.55:

These medical examinations are provided for affected employees:

1. Prior to job assignment and annually thereafter (or every two years if a physician determines that is sufficient.)
2. At termination of employment;
3. Before reassignment to an area where medical examinations are not required;
4. If the examining physician believes that a periodic follow-up is medically necessary;
5. As soon as possible for employees injured or becoming ill from exposure to hazardous substances during an emergency, or who develop signs or symptoms of overexposure from hazardous substances.

Note: The National Institute for Occupational Safety and Health (NIOSH) recommends that examinations must occur before job placement or upon entering a trade, and at least every three years thereafter. They also encourage reporting of cases of silicosis to OSHA or MSHA.

They include:

1. A medical and occupational history to collect data on exposure and signs and symptoms of respiratory disease such as silicosis.
2. A chest X-ray classified according to the 1980 International Labour Office (ILO) International Classification of Radiographs of Pneumoconiosis
3. Pulmonary function testing (spirometry).
4. Availability of air and medical surveillance data to workers is an OSHA requirement (29 CFR 1926.33).

Training and information

It is the policy of EMA to permit only trained and authorized personnel to operate sandblasting equipment. The Project Manager will identify all new employees in the employee orientation program and make arrangements with department management to schedule training.

The Project Manager or designee will conduct initial training and evaluation: This instructor(s) must have the necessary knowledge, training, and experience to train new welding and cutting equipment operators and the hazards associated with crystalline silica exposure.

Our instruction includes both classroom instruction and practical training.

During training, EMA covers the operational hazards of sandblasting operations, including:

- Hazards associated with the particular make and model of the sandblasting equipment;
- Hazards of the abrasives utilized; and
- General hazards that apply to the operation of all sandblasters

Each potential sandblaster who has received training in any of the elements of our training program for the types of equipment which that employee will be authorized to operate and for the type of workplace in which the sandblasting equipment will be operated need not be retrained in those elements before initial assignment in our workplace if the employee is evaluated to be competent.

We will provide our workers with training on Sandblasting and Silica Exposure that includes:

1. Information about the potential health effects of exposure to crystalline silica.
2. Material safety data sheets for silica, masonry products, alternative abrasives, and other hazardous materials (29 CFR 1926.59)
3. Instruction about the purpose and set-up of regulated areas marking the boundaries of work areas containing crystalline silica.
4. Information about safe handling, labeling, and storage of toxic materials.
5. Discussion about the importance of substitution, engineering controls, work practices, and personal hygiene in reducing crystalline silica exposure.
6. Instruction about the use and care of appropriate protective equipment (including protective clothing and respiratory protection).

Our silica dust Training and Information Program consists of this written program.

What is crystalline silica (quartz)?

The terms "crystalline silica" and "quartz" refer to the same thing. Crystalline silica is a natural constituent of the earth's crust and is a basic component of sand and granite.

What is silicosis?

Silicosis is a disease of the lungs due to breathing of dust containing crystalline silica particles. This dust can cause fibrosis or scar tissue formations in the lungs that reduce the lung's ability to work to extract oxygen from the air. There is no cure for this disease, thus, prevention is the only answer.

What are the symptoms of silicosis?

There are several stages of silicosis. Early stages may go completely unnoticed. Continued exposure may result in the exposed person noticing a shortness of breath upon exercising, possible fever and occasionally bluish skin at the ear lobes or lips. Silicosis makes a person more susceptible to infectious diseases of the lungs like tuberculosis. Progression of the disease leads to fatigue, extreme shortness of breath, loss of appetite, pain in the chest, an respiratory failure,

which all may lead eventually to death. Acute silicosis may develop after short periods of exposure. There are three types of Silicosis:

1. Chronic silicosis usually occurs after 10 or more years of exposure to lower levels of quartz.
2. Accelerated silicosis usually develops in 5-10 years after initial exposure to high concentrations.
3. Acute silicosis is exposure to extremely high concentrations & symptoms develop within a few weeks to a few years

Where are construction workers exposed to crystalline silica dust?

The most severe exposures to crystalline silica result from sandblasting to remove paint and rust from stone buildings, metal bridges, tanks, and other surfaces. Other activities that may produce crystalline silica dust include jack hammering, rock/well drilling, concrete mixing, concrete drilling, and brick and concrete block cutting and sawing. Tunneling operations; repair or replacement of linings of rotary kilns and cupola furnaces; and setting, laying, and repair of railroad track are potential sources of crystalline silica exposure.

Methods of compliance

Administrative procedures, engineering controls, and good work practices

Exposures to gases, vapors, fumes, dusts, and mists can be controlled through the use of engineering controls and work practices. Engineering controls are hazard controls designed into equipment and workplaces. Work practices are procedures followed by employers and workers to control hazards. Some of the engineering controls and work practices you may use during work that could generate silica dust are:

1. Recognize when silica dust may be generated and plan ahead to eliminate or control the dust at the source. Awareness and planning are keys to prevention of silicosis.
2. Use dust collection systems available for many types of dust-generating equipment. When purchasing equipment, our priority will be equipment that contains dust control methods.
3. During rock drilling, use water through the drill stem to reduce the amount of dust in the air, or use a drill with a dust collection system.
4. When sawing concrete or masonry, use saws that provide water to the blade.
5. When available, use local exhaust ventilation systems to prevent dust from being released into the air.
6. When doing abrasive blasting, substitute less hazardous materials than silica sand or other substances containing more than 1% crystalline silica.
7. Use engineering controls and containment methods, such as blast-cleaning machines and cabinets, wet drilling, or wet sawing of silica-containing materials to control the hazard and protect adjacent workers from exposures.

Hygiene facilities and practices

Personal hygiene practices are essential for protecting workers from gases, vapors, fumes, dusts, and mists. The same is true for respirable crystalline silica and other contaminants during abrasive-blasting operations. Here are some suggested practices for protecting workers from crystalline silica during these operations:

1. Do not eat, drink, or use tobacco products in dusty areas.
2. Wash your hands and faces before eating, drinking, or smoking outside dusty areas.
3. Park cars where you will not be contaminated with silica and other substances such as lead.
4. Practice good personal hygiene to avoid unnecessary exposure to other work site contaminants such as lead.
5. Shower (if possible) and change into clean clothes before leaving the work site to prevent contamination of cars, homes, and other work areas.

Housekeeping

Our housekeeping practices include:

Housekeeping must be done often and it must be done properly. For example, you don't want to dry sweep dust into a dust pan; this puts some of the dust back into the air. You may choose to use vacuums with high-efficiency particulate air (HEPA) filters, or use wet sweeping instead of dry sweeping. When removing dust from equipment, use a water hose rather than compressed air.

Protective clothing

We will take the following steps to assure that gas, vapor, fume, dust, and mist work clothing do not contaminate cars, homes, or work sites outside the dusty area:

Respirators and the respiratory protection program

We know the OSHA regulation requires us to implement a respirator program when engineering, administrative, and good work practices are not enough to keep Silica exposure below their permissible exposure limit (PEL), as found in 29 CFR 1926.55. We will not use respirators as the primary means of preventing or minimizing exposures to airborne contaminants. Instead, we will use effective source controls such as:

- Substitution,
- Automation,
- Enclosed systems,
- Local exhaust ventilation,
- Wet methods, and
- Good work practices.

Such measures will be the primary means of protecting our workers. However, when source controls cannot keep exposures below the PEL, controls will be supplemented with the use of respirators.

Our Respirator Program is attached to this written program and follows the requirements of 29 CFR

1926.103.

Communication of Hazards

We will post warning signs to mark the boundaries of work areas contaminated Crystalline Silica at or above their PELs.

Our Communication of Hazards program is supplemented by the requirements of 29 CFR 1926.59-Hazard Communication and is part of our written safety and health program.