## **Silica Exposure Control**

1. **Purpose**

The purpose of this procedure is to establish guidelines to protect affected personal from exposure to silica dust. The written exposure control plan shall be available for examination and copying by each employee.

1. **Responsibility**

The Supervisor shall:

* Inform affected personnel of the hazards of working with silica-containing materials or working in an environment known to contain airborne concentrations of silica.
* Provide instruction on the precautions specified in the job-specific plan covering hazards at the job location.
* Ensure the risk to workers is minimized and adequately controlled.

The Employee shall:

* Know the hazards of silica dust exposure.
* Use appropriate PPE and follow all work procedures as directed by the Supervisor.

1. **Health Effects**

Exposure to silica has been shown to cause silicosis, lung cancer, pulmonary tuberculosis, bronchitis and other airway diseases.

Silicosis is a disease caused by fine particles that are deposited in the lungs causing thickening and scaring of the lung tissue. The scar tissue restricts the lungs’ ability to extract oxygen from the air. The damage is permanent and the extent depends on the concentrations of silica dust and the duration of exposure. Initially, workers with silicosis may have no symptoms.

As the disease progresses, a worker may experience:

* Shortness of breath
* Severe cough
* Weakness
* Death

1. **Exposure Assessment**

* An exposure assessment will be conducted using personal air monitoring to determine the employees’ exposures for the job being performed.
* Personal air monitoring shall be conducted where the potential for exposure to respirable crystalline silica is expected to be at or above the action level (8-hour TWA of 25μg/m³), to ensure employee exposure does not exceed the PEL for silica.
* Full shift personal samples shall be representative of the employee’s regular, daily exposure to silica.
* Air monitoring will be repeated every 3 months or when changes occur which could potentially increase silica exposure.

1. **Medical Surveillance**

* A medical surveillance will be made available for employees who are exposed to the action level of 8-hour TWA of 25μg/m³ of respirable crystalline silica for more than 30 days per year or who use respirators for more than 30 days per year.
* A baseline medical assessment will be available to exposed employees within 30 days of initial assignment unless they have previously received a suitable medical examination in the past three years.

1. **Work Procedures**

* Activities such as sawing, drilling, jackhammering, grinding, cutting or similar activities on material that contains Crystalline Silica, can lead to the exposure to respirable crystalline silica. Some materials that contain Crystalline Silica include cement, concrete, brick, stone, sand, asphalt, pipe, etc.
* All affected employees will undergo medical surveillance prior to beginning any work in a silica environment.
* A tool-box safety meeting will be conducted to ensure all affected employees understand the safety requirements of the job and the hazards of silica exposure.
* The supervisor will issue the appropriate personal protective equipment and clothing.
* When an employee leaves the work area for a break, they will be vacuumed off using a HEPA filtered vacuum and all PPE and clothing will be placed in a designated storage area.
* At the end of a work shift, the employee is must shower, clean their PPE, and place contaminated clothing in designated area.

1. **Control Procedures**

* Where exposure to crystalline silica may occur, appropriate control procedures will be applied to eliminate or reduce the risk to employees from the hazards of silica dust exposure.
* Work activities will be assessed to determine if exposure to silica can be reduced through elimination or substitution by using products with less silica or using work methods that would eliminate the need for surface grinding or cutting.
* Depending on the work activities, engineering controls may be the best application for minimizing exposure to silica. The following engineering controls shall be applied as appropriate:
  + Local Exhaust Ventilation (LEV)
  + Wet Dust Suppression (WDS)
  + Restricting or isolating the work activity with barriers or full enclosures (this may be the only option where LEV or WDS is not practical or effective).
* When appropriate, the following administrative controls may be utilized:
  + Housekeeping measures
  + Work area restrictions
  + Personal hygiene
  + Employee training
  + Warning signs

1. **Personal Protective Equipment (PPE)**

* Respirators shall be provided to employees who are or will be exposed to actionable levels of respirable crystalline silica.
* Prior to working in a silica environment, each employee will be issued respiratory protective equipment applicable to their specific job assignment.
* Respirators must be selected based upon measured exposure levels and the assigned protection factor of respirators.
* All employees who wear respirators will do so in adherence with the Company respirator program.
* Employees working in a silica environment will be provided protective clothing and equipment to control silica contamination and exposure.
* All protective clothing and equipment must be stored in a designated area.
* The following PPE will be provided and worn when exposure to silica exists:
  + Gloves
  + Coverall
  + Eye protection

1. **Hygiene Practices**

* Employees will be provided with a wash area and a shower when working in a silica environment.
* Employees who work in a silica environment must shower at the end of the work shift.
* Personnel working in a silica environment must wash their hands and face before lunch or break.
* Eating, drinking, smoking, dipping, or applying cosmetics is prohibited while working in a silica environment.
* Compressed air must not be used for cleaning in a silica work environment.

1. **Housekeeping and Maintenance**

* Work areas where silica dust may accumulate must be kept clean and materials collected and kept in appropriate containers.
* When cleaning silica dust from the work area, exposure shall be reduced by using a HEPA-filtered vacuum, wet sweeping, wetting, or other appropriate techniques.
* Work clothing must be placed in closed top containers prior to washing or removal from the job site. If these are to be washed by an outside company, a letter documenting that the clothing contains Silica must be provided for the company receiving the clothing.
* Compressed air cannot be used to clean clothing or surfaces where doing so could contribute to employee exposure to respirable crystalline silica.

1. **Review**

* The written exposure control plan shall be evaluated at least once per year and as necessary.
* Situations where reevaluation may be necessary include regulatory updates, changes in equipment, and exposure incidents.
* Any changes resulting from this process must be communicated to affected employees.

1. **Recordkeeping**

Accurate records of all air monitoring data, objective data, medical surveillance, and training records shall be maintained as required by the regulation.

1. **Training**

Personnel will be trained prior to using silica-containing materials or working in an environment known to contain airborne concentrations of Silica. Refresher training will be provided as needed.

Training shall include the following:

* Hazards associated with exposure to silica dust.
* The risks of exposure to silica.
* Signs and symptoms of silica disease.
* Safe work procedures to be followed.
* Use of respirators and other personal protective equipment.
* Use of control systems and procedures.
* How to seek first aid and how to report an exposure to silica dust.