MODEL CRYSSTALLINE SILICA EXPOSURE CONTROL PLAN

PROBLEM
Crystalline silica is a dangerous mineral that can cause lung cancer and silicosis. Although OSHA is expected to publish a final rule for crystalline silica by the end of 2012, the hazard is currently subject to regulation under the hazardous dusts standard. Among other things, employers are required to develop a plan to limit workers’ exposure to crystalline silica below the PEL, or permissible exposure limit.

HOW THE TOOL HELPS SOLVE THE PROBLEM
Here’s a Model Plan for controlling exposure to crystalline silica that you can adapt for your own workplace. 3 important caveats:

1. The Model Plan is pretty vanilla and geared off minimal OSHA requirements, including current PELs for crystalline silica.

2. If OSHA does publish a final crystalline silica rule, it’s expected to implement more restrictive PELs. So you’ll need to revise the Plan if and when the rule is published and before it takes effect; and

3. Because the Model Plan is so vanilla, it can be used as a framework for limiting workers’ exposure to other airborne contaminants—e.g., medical surveillance, air monitoring and other general measures required to control these hazards—including metals like lead and other minerals like asbestos.
COMPANY ABC

CRYSTALLINE SILICA EXPOSURE CONTROL PROGRAM

1.0 CRYSTALLINE SILICA IS DANGEROUS!!

Exposure to crystalline silica, a chemical compound found in minerals, is very dangerous because it can cause serious lung diseases include a disease called silicosis. There are more than one million U.S. workers, including over 100,000 in high risk settings, who are exposed to crystalline silica when they work. These workers work in a wide range of industries that use silica, including construction, mining, maritime industries, foundries, ceramics and glass manufacturing, electronics, agriculture, rock quarry/crushing and abrasives manufacturing. Among those at risk may be employees of ABC Company.

2.0 PROGRAM PURPOSE

ABC Company has created this program to reduce or eliminate workplace exposure to crystalline silica at its workplace.

3.0 POTENTIAL CRYSTALLINE SILICA EXPOSURES

Crystalline silica is usually contained in rocks and released via dust. The following activities may cause crystalline silica dust to be in the air:

- Sawing, hammering, cutting, drilling, grinding, and chipping of concrete or masonry
- Chipping, hammering, and drilling rock
- Dry sweeping or pressurized air blowing of concrete, rock, or sand dust
- Crushing, loading, hauling, and dumping rock
- Sandblasting
- Demolition of concrete and masonry structures
- Concrete mixing
- Working with ceramics, clay, and pottery

4.0 PRECAUTIONS TO TAKE WITH MATERIALS CONTAINING SILICA

1. A product that contains silica must be labeled if the product contains more than 0.1% silica that may be hazardous when used.

2. The machines used in the operations must be labeled with warning signs indicating that silica is being used.

3. If a material or product contains crystalline silica in quantities greater than 0.1%, there must be a material safety data sheet for it.

5.0 AIR MONITORING
1. The ABC Company Environmental & Health Department (EHS Dept.) will inspect each worksite and work operation to determine if employees are exposed to silica above the PEL, i.e., Permissible Exposure Limit that a worker may safely be exposed to under OSHA regulations. Indicators that an evaluation of employee exposure should be undertaken include:

- Information or observation which would indicate employee exposure to silica.
- Employee complaint of symptoms which may be attributed to exposure to silica.
- Change which may result in an increase in the airborne concentration of silica.

2. The EHS Dept. will conduct air monitoring to measure worker exposures and ensure that engineering controls and respiratory protection are providing adequate protection.

3. Air monitoring information and results will be made available to workers.

4. Employees must wear a cyclone assembly and sampling pump throughout the work shift for up to 8 hours. Dust samples will be collected from the worker’s breathing zone.

5. The method of monitoring and analysis will have an accuracy of at least plus or minus 25% for concentrations of airborne silica equal to or greater than the PEL.

6. If employees are exposed to silica above the PEL monitoring will be repeated quarterly.

**6.0 EXPOSURE LIMIT**

1. OSHA regulations (Sec. 1910.1000 Table Z-3) will be used to determine the permissible exposure limits for crystalline silica.

2. The OSHA PELs for crystalline silica are currently 10mg/m3 divided by the percent of silica in the dust +2 (respirable), and 30 mg/m3 divided by the percent of silica in the dust +2 (total dust). For cristobalite and tridymite, the same formula will be used to determine the PELs, divided by one-half.

3. ABC Company will consider NIOSH and ACGIH recommended exposure limits when determining employee exposure. The recommended NIOSH limit is 0.05 mg/m3 and the ACGIH recommendations are:

- 0.05 mg/m3 for cristobalite
- 0.1 mg/m3 for quartz
- 0.05 mg/m3 for tridymite
- 0.1 mg/m3 of contained tripoli respirable quartz

**7.0 MEDICAL SURVEILLANCE**

1. Medical examinations will be made available:
• To employees before their assignment in areas in which airborne concentrations of silica are above the PEL.
• At least annually for each employee exposed to airborne concentrations of silica above the PEL at any time during the preceding 6 months.
• Immediately, upon notification by the employee, that the employee has developed signs or symptoms commonly associated with chronic exposure to silica.

2. The medical examination will include a medical and occupational history to elicit data on signs and symptoms of respiratory disease before exposure to silica. A chest x-ray and PFT will be performed at the physician’s discretion. The chest x-ray will be read by a certified class "B" reader.

3. A chest x-ray will be obtained when an employee’s employment ends.

4. Where medical examinations are preformed, the following information will be provided to the examining physician:

   • The reason for the medical examination.
   • A description of the affected employee’s duties as they relate to the employee’s exposure.
   • The results of the employee’s exposure measurements, if available.
   • The employee’s anticipated or estimated exposure level.

5. The EHS Dept. will obtain and furnish the employee with a written opinion from the examining physician containing the following:

   • The signs or symptoms of silica exposure displayed by the employee.
   • A report on the findings of the chest x-ray and PFT test.
   • The physician’s opinion as to whether the employee has any medical condition which would place the employee at increased risk from exposure to silica or would aggravate any medical condition.
   • Any recommended limitation upon the employee’s exposure to silica or upon the use of PPE and respirators.
   • A statement that the employee has been informed by the physician of any medical condition which requires further examination or treatment.

6. The written opinion will not reveal specific findings or diagnoses unrelated to occupational exposure to silica.

8.0 SAFE WORK PRACTICES

1. The primary means of protecting workers will be through the use of less toxic materials, enclosed systems, local exhaust ventilation, wet methods, and good work practices.

2. The following measures will be used to reduce exposure to crystalline silica in the workplace:

   • Wet down the dust at the point of generation.
- Install local exhaust ventilation to prevent dust from being released into the air.
- During rock drilling, flow water through the drill stem.
- Install dust collection systems onto machines or equipment that generated dust.
- Use concrete/masonry saws that provide water to the blade.

3. Silica sand or other substances containing more than 1% crystalline silica will not be used for abrasive blasting.

4. Good personal hygiene will be practiced to avoid unnecessary exposure. Eating, drinking, use of tobacco products, or applying cosmetics will not be done in areas where there is dust containing crystalline silica.

5. If possible, employees will shower and change into clean clothes before leaving the worksite to prevent contamination of cars, homes, and other work areas.

9.0 PERSONAL PROTECTIVE EQUIPMENT

1. When source controls cannot keep exposures below the PEL, respiratory protection will be used.

2. When respirators are used, the EHS Dept. will enroll workers in a comprehensive Respiratory Protection Program. Important elements of this program are:
   - Periodic environmental monitoring.
   - Training of personnel.
   - Selection of proper NIOSH approved respirators.
   - An evaluation of the worker’s ability to perform the work while wearing a respirator.
   - Respirator fit testing.
   - Maintenance, inspection, cleaning, and storage of respiratory protection equipment.

3. A respirator approved for protection against crystalline silica-containing dust will be used.

4. If possible, disposable or washable protective clothes will be worn at the worksite.

10.0 HOUSEKEEPING PROGRAM

1. Exposed surfaces must be maintained free of accumulation of silica dust. To minimize hazards, the following procedures will be used to clean areas contaminated with dust containing crystalline silica:
   - Clean floors daily with a wet mop, wet pickup vacuum, or a HEPA filtered vacuum cleaner. The most effective method is with a HEPA vacuum cleaner.
   - Never sweep, dry mop, use compressed air, or use a regular vacuum cleaner. Regular vacuum cleaners are not suitable because they filter out heavy particles, allowing the finer more hazardous particles to pass into the air.
   - Clean shelves with a damp sponge or a HEPA vacuum cleaner.
• Used filters should be carefully placed in a double plastic bag and disposed in the regular trash. Wear the proper respirator when changing filters.

11.0 TRAINING

1. Workers who may be exposed to silica will receive safety training to include the following:
   • Information about the potential health effects of exposure to respirable crystalline silica.
   • Material safety data sheets/Safety data sheets for silica, masonry products, alternative abrasives, and other hazardous materials.
   • Instruction about the purpose and set-up of regulated areas marking the boundaries of work areas containing crystalline silica.
   • Information about safe handling, labeling, and storage of toxic materials.
   • Discussion about the importance of substitution, engineering controls, work practices, and personal hygiene in reducing crystalline silica exposure.
   • Instruction about the use and care of appropriate personal protective equipment (including protective clothing and respiratory protection).

2. Training will be conducted by the EHS Dept. Training records will be kept in the EHS Dept. office for 3 years.

3. Training will be performed before an employee’s assignment to an area where the employee may be exposed to silica. Retraining will be performed if the EHS manager or supervisor believes it is necessary to prevent or reduce exposures.

12.0 WARNING SIGNS

1. Warning signs will be posted to mark the boundaries of work areas contaminated with crystalline silica. These signs will warn workers about the hazard and specify any protective equipment required.

2. The sign will contain the following words or similar words:

   *Warning*- Crystalline Silica Work Area- Improper handling or exposure to the dust may cause silicosis and death- Respirator Required.