



## Silica

### A. Hazard

1. Crystalline silica is a common mineral used in many industrial products. Materials like sand, concrete, stone, and mortar contain crystalline silica. Crystalline silica is also used to make products such as glass, pottery, ceramics, bricks, and artificial stone.
2. Respirable crystalline silica (RCS) is produced when materials containing crystalline silica are broken down into very small particles.
3. Larger dust is easily removed from your upper respiratory system. The airway is lined with small hairs and mucous that functions as a ladder to work the larger dust particles up the airway and out of the body. Smaller dust such as RCS can be inhaled deeper into the lungs where some can be trapped and become harder to remove.
4. Some health hazards associated with unprotected employee exposure to repeatedly high levels of RCS include:
  - a. **Silicosis:** crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. When silica dust enters the lungs, it causes the formation of scar tissue, which makes it difficult for the lungs to take in oxygen.
  - b. **Lung Cancer:** a disease where abnormal cells grow uncontrollably into tumors, interfering with lung function. The abnormal cancer cells can also travel ("metastasize") and cause damage to other parts of the body.
  - c. **Chronic Obstructive Pulmonary Disease (COPD):** Exposure to RCS increases the risk of other lung diseases, primarily COPD, which includes emphysema and chronic bronchitis. The main symptom of COPD is shortness of breath due to difficulty breathing air into the lungs.

### B. Regulations

1. Contractors shall follow all requirements of OSHA Standards:
  - a. General Industry 29 1910.1053,
  - b. Maritime 1915.1053,
  - c. Construction 1926.1153

### C. Requirements

1. During the NNS pre-approval process, each contractor whose employees are exposed to or may be exposed to respirable crystalline silica above applicable OSHA regulatory limits, must provide to the NNS Environmental, Health and Safety Department a copy of its written program. This document must describe the contractor's program for complying with each element of the applicable OSHA standard(s). The contractor shall provide a copy of any changes to the program on an annual basis, such as at the beginning of each year.



2. The silica control program shall include all employees exposed to respirable crystalline silica at or above the OSHA Action Level. The program will include:
  - a. Methods of communication of respirable crystalline silica hazards to employees,
  - b. Air monitoring to assess employee exposures,
  - c. Written exposure control plan to reduce silica exposures,
  - d. Medical examinations, including a chest X-ray interpreted by a NIOSH-certified B reader,
  - e. Use of personal protective equipment and work clothing, including respiratory protection procedures, if respirators are utilized,
    - 1) OSHA Silica Standards, approved respiratory protection, governed by a respiratory protection program, is required for every worker exposed to silica above the OSHA PEL when exposures are not controlled by engineering means.
  - f. Housekeeping and hygiene procedures,
  - g. Employee training procedures,
  - h. Recordkeeping procedures.