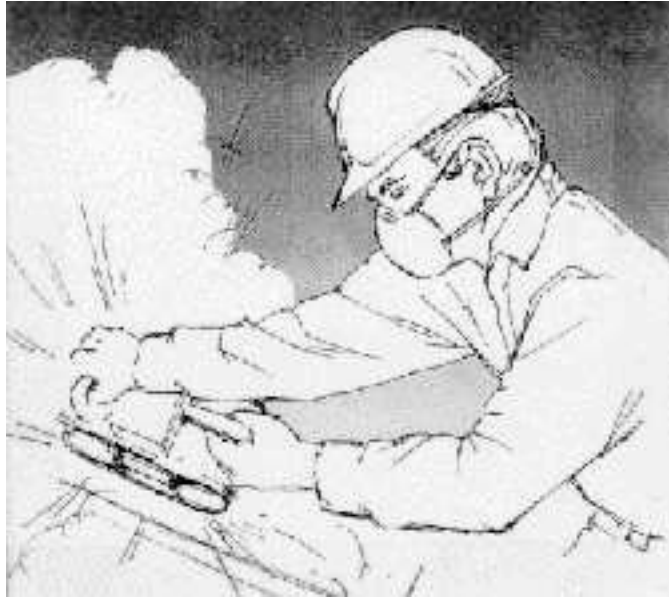


Crystalline Silica Dust Exposure In Construction

Background

Worker exposure to crystalline silica and other air contaminants often goes unchecked because some businesses lack organized respiratory protection programs or employee training. Many managers as well as workers have regarded crystalline silica dust exposure as part of the job, or in other words, as "just



being dust". Crystalline silica can cause silicosis (formation of nodules deep in the lung) and lung cancer. After an extremely high level of exposure for one to three years, silicosis can be fatal. Usually however, there is a gradual decrease in lung function and for many persons no noticeable change. However with silicosis there is greater susceptibility to lung infections and similarly there is a greater risk of lung cancer.

Construction activities during which may produce **dust containing respirable crystalline silica** include:

- **Abrasive blasting.** Exposures to crystalline silica can be very high. This is particularly true when silica sand is used as the abrasive (sandblasting), although blasting of concrete or stone surfaces may produce crystalline silica exposures regardless of the blasting agent. Abrasive blasting often occurs prior to bridge and tank painting, as well as other steel structure work (either new construction or maintenance).

- **Masonry, bricklaying, block laying, and/or stone setting.** Masonry contains crystalline silica in varying amounts. If any of these materials are sawed, hammered, or ground without dust control, there will be very high dust concentrations. Mixing of sand for mortar may add to the exposure.
- **Demolition and repair of concrete or masonry structures.** Demolition of buildings, highways, and bridges, and repair of roads and highways can generate ample quantities of dust containing crystalline silica. Whenever a concrete or masonry structure such as a highway is sawed, drilled, or jackhammered, there is potential for high exposures.
- **Concrete finishing work.** After a concrete foundation, wall, or floor has been poured, workers may grind, drill, or saw the surface of the concrete. These operations often smooth or shape the concrete prior to the application of a finish surface or finish appliances. Sometimes this work is done with hand-held grinders, drills, or saws that are used without dust collection or water spray. Concrete grinding, drilling, or sawing for any purpose can produce high crystalline silica exposure levels.
- **Rock drilling.** Drilling in rock prior to blasting for highway construction, or for other reasons such as site preparation, water well drilling, or pipeline installation, is basically the same in the construction industry as in past surface mining.

Recommendations

The key to preventing silicosis is keeping dust out of the air. Construction managers and industrial hygienists must recognize when silica dust may be generated and plan ahead to eliminate or control the dust at the source. Dust controls can be as simple as a water hose to wet the dust before it becomes airborne. Air monitoring is needed to measure worker exposures to respirable crystalline silica, to select appropriate engineering controls and

respiratory protection, and to measure the effectiveness of controls.