



CRYSTALLINE SILICA

Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are two other forms of crystalline silica. All three forms may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica.

WHAT ARE THE HAZARDS OF CRYSTALLINE SILICA?

Silica exposure remains a serious threat to workers in high risk jobs such as abrasive blasting, foundry work, stonecutting, rock drilling, quarry work and tunneling. The seriousness of the health hazards associated with silica exposure is demonstrated by the fatalities and disabling illnesses that continue to occur.

Crystalline silica has been classified as a human carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. The respirable silica dust enters the lungs and causes the formation of scar tissue, thus reducing the lungs' ability to take in oxygen. There is no cure for silicosis. Since silicosis affects lung function, it makes one more susceptible to lung infections like tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust.



WHAT ARE THE SYMPTOMS OF SILICOSIS?

Silicosis is classified into three types: chronic/classic, accelerated, and acute.

- Chronic/classic Silicosis, the most common, occurs after 15-20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.
- Accelerated Silicosis can occur after 5-10 years of high exposure to respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.
- Acute Silicosis occurs after a few months or as long as two years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

FOR ENQUIRIES:

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WHERE ARE WORKERS EXPOSED TO CRYSTALLINE SILICA?

Exposure occurs during many different activities. The most severe exposures generally occur during abrasive blasting with sand to remove paint and rust from bridges, tanks, concrete structures, and other surfaces. Other activities that may result in severe exposure include: jack hammering, rock/well drilling, concrete mixing, concrete drilling, brick and concrete block cutting and sawing, tuck pointing, and tunneling operations.

WHAT ARE THE HEALTH EFFECTS OF EXPOSURE TO CRYSTALLINE SILICA?

Occupational exposure to crystalline silica often occurs as part of or working alongside common workplace operations involving cutting, sawing, drilling, and crushing of concrete, brick, block, rock, and stone products. Operations using sand products can also result in worker inhalation of small (respirable) crystalline silica particles in the air. Health effects from silica exposures include:

- Silicosis, a disabling, non-reversible and sometimes fatal lung disease;
- Other non-malignant respiratory diseases, such as chronic bronchitis;
- Lung cancer; and
- Kidney disease, including nephritis and end-stage renal disease.

To a lesser extent, there is cause for concern that silica exposures may be associated with auto-immune disorders and cardiovascular disease.

WHAT CAN YOU DO TO PROTECT AGAINST EXPOSURES TO CRYSTALLINE SILICA?

- Replace crystalline silica materials with safer substitutes, whenever possible.
- Provide engineering or administrative controls, such as local exhaust ventilation, and blasting cabinets.
- Use all available work practices to control dust exposures, such as water sprays.
- Wear only a N95 NIOSH certified respirator, if respirator protection is required. Do not alter the respirator. Do not wear a tight-fitting respirator with a beard or mustache that prevents a good seal between the respirator and the face.
- Wear only a Type CE abrasive-blast supplied-air respirator for abrasive blasting.
- Wear disposable or washable work clothes and shower if facilities are available. Vacuum the dust from your clothes or change into clean clothing before

leaving the work site.

- Participate in training, exposure monitoring, and health screening and surveillance programs to monitor any adverse health effects caused by crystalline silica exposures.
- Be aware of the operations and job tasks creating crystalline silica exposures in your workplace environment and know how to protect yourself.
- Be aware of the health hazards related to exposures to crystalline silica. Smoking adds to the lung damage caused by silica exposures.
- Do not eat, drink, smoke, or apply cosmetics in areas where crystalline silica dust is present. Wash your hands and face outside of dusty areas before performing any of these activities.



THOUGHT OF THE MONTH:
**TOMORROW YOUR REWARD FOR
WORKING SAFELY TODAY.**



MINUTES OF MEETING

Date: _____ Person Conducting Meeting: _____

Topic: _____

Branch: _____ Division: _____

Attendees:

NAME	INITIAL	DATE

NAME	INITIAL	DATE

Additional Items Discussed:

Problem Areas or Concerns:

Comments:

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