WHY IS CRYSTALLINE SILICA EXPOSURE HAZARDOUS TO SANDBLASTING WORKERS?

WHAT IS 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.

WHERE CAN WE FIND CRYSTALLINE SILICA?

Crystalline silica may become particles of respirable size in certain production processes dealing with materials and/or substrates containing that substance. These processes include grinding, chipping, cutting, and… abrasive blasting

Some abrasive media can release a certain amount of free crystalline silica dust when they shatter upon contact with the workpiece. Some contaminants or coating materials on parts may also contain crystalline silica and/or other heavy metals, which could be harmful for human health.

WHY IS CRYSTALLINE SILICA HAZARDOUS TO OPERATORS?

Crystalline silica has been classified as a human lung carcinogen. Also, breathing crystalline silica may cause silicosis, which occurs when silica dust enters the lungs and causes the formation of scar tissue. Like many lung diseases, silicosis reduces the lungs' ability to supply oxygen to the human body. It also affects lung function, exposing humans to infections like tuberculosis. Unfortunately, silicosis is incurable and can lead to disability or, in worse cases, death.

According to studies, over two million American workers and 380,000 Canadians workers are exposed to silica at work. According to 2011 cancer statistics from the Occupational Cancer Research Centre (OCRC)'s Burden of Occupational Cancer Study, 570 lung cancer cases (2.4% overall) were attributed to occupational exposure to crystalline silica in Canada.

HOW CAN YOU DETERMINE IF A PRODUCT CONTAINS HAZARDOUS CONCENTRATIONS OF CRYSTALLINE SILICA?

Always consult your material safety data sheet (MSDS) to find the composition of your product, as well as the associated risks for your workers. Materials containing less than 1% free crystalline silica are not considered hazardous according to major safety organizations, but may still put your operators at risk when no safety measures are undertaken

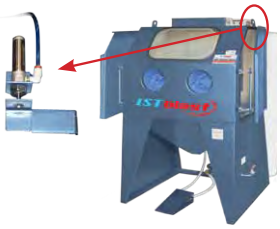
Occupational Safety and Health Administration (OSHA) has established the Permissible Exposure Limit (PEL), which is the maximum amount of crystalline silica to which workers may be exposed during an eight-hour work shift. This article can be found here: 29 CFR 1926.55, 1910.1000

HOW CAN YOU PREVENT CRYSTALLINE SILICA EXPOSURE?

- **Avoid using recycled glass** or other abrasive media containing high concentrations of free crystalline silica (above 1%). Not only do they produce significant amounts of hazardous crystalline silica dust, but they are also harmful for your blasting system because they cause premature wear on critical components such as valves, hoses, and nozzles.

- **Equip your system with the proper dust collection system** for your application. The dust collector will draft away dust and other fine particles at the source where it is produced, before it can escape into the work environment and contaminate the air your workers breathe. A regular maintenance schedule on the dust collection and ducting system is also necessary to ensure it is operating in optimal working condition.

- **If you are operating a sandblast cabinet, make sure it is equipped with a door-lock safety device.** This low-value, highly effective device will lock your door for a certain amount of time whenever blasting operations stop (i.e. 30 seconds) to make sure all dust is drafted away before the operator can open the door and breathe the air inside the cabinet. For some safety regulation bodies, including OSHA, such a safety device is mandatory in work environments within their jurisdiction.



- **If you are blasting in an open space, such as a blast booth or outdoors, always wear a proper air breathing and filtration system.** In fact, the use of an air breathing and filtration system is ALWAYS recommended when you are dealing with an application that produces dust. A breathing helmet connected to a proper air filtration system will ensure that your workers breathe clean air at all times.

- **Establish and maintain a sustainable training and information program** to make sure that all your workers are aware of the risks associated with crystalline silica exposure and the preventive measures that can be taken to protect them.

- **Check with your local safety jurisdiction** to find out more about the preventive measures and obligations which employers must follow if their workers are exposed to crystalline silica.

IST designs and manufactures custom abrasive blasting systems which systems which can help your company to comply with your local jurisdiction. For more information on the hazards of crystalline silica and what you can do to protect your workers, contact one of our experts today.

Sources:

"Crystalline Silica Exposure" Health Hazard Information for General Industry Employees, OSHA, 2002 (https://www.osha.gov/Publications/osha3176.html)

Respirable Crystalline Silica: Breathe Easier, CCOHS, 2005, (https://www.ccohs.ca/newsletters/hsreport/issues/2017/05/ezine.html#hsreport-ontopic)