Basics of Silica

Silica and Silicosis

The Basics on Silica

Silica is a mineral compound made up of one silicon atom and two oxygen atoms.

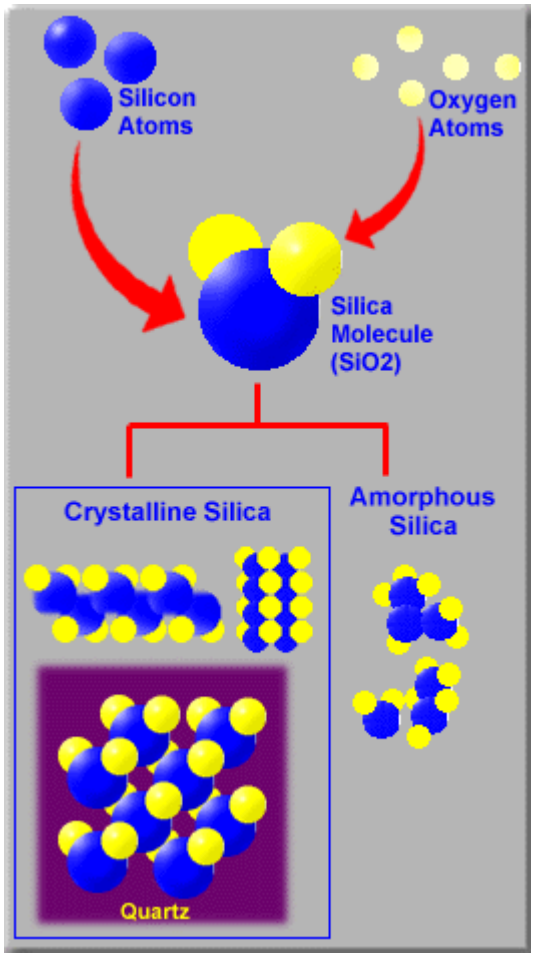
Oxygen is the most abundant element in the earth's crust. Silicon is the second most abundant. Due to such abundance, the formation of the compound silica in nature is very common.

There are other compounds that contain silicon whose names are quite similar, such as silicate and silicone. Do not mistake these for silica. They are not the same thing.

If the individual silica molecules are lined up in order and create a repeatable pattern then the silica is in crystal form. We call it "crystalline" silica.

There can be more than one repeatable pattern in silica. The various crystal patterns are given their own name. There are quartz, cristobalite, tridymite, and other rare forms of crystalline silica. Quartz is so common that the term *quartz* is often used to refer to crystalline silica. And *sand* is often used to refer to quartz.

Persons working with silica can develop a disease called silicosis. This disease is 100% preventable if appropriate steps are taken. Individuals are at risk in the workplace if: 1) the silica can become airborne, 2) the airborne particles are a certain size, 3) the worker breathes in the silica.



Consult the *Crystalline Silica Primer*. US Department of Interior (DOI) / US Bureau of Mines, 4 MB PDF, 50 pages.

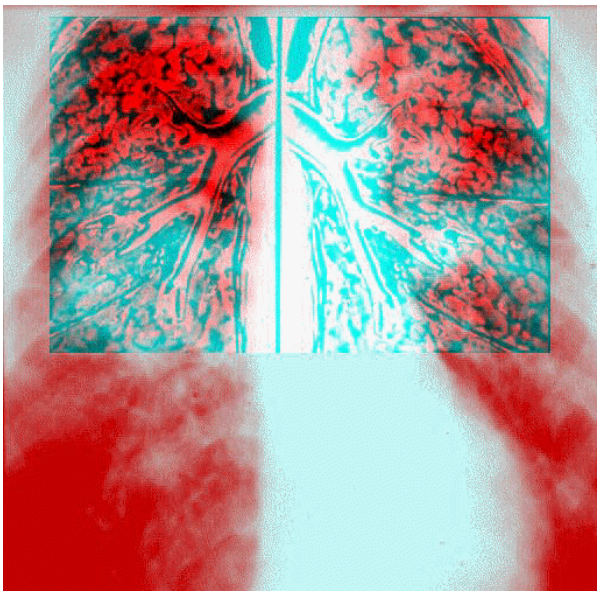
The Basics on Silicosis

Silicosis is a disease where scar tissue forms in the lungs and

reduces the ability to extract oxygen from the air.

Symptoms include:

- shortness of breath while exercising
- fever
- occasional bluish skin at ear lobes or lips
- fatigue
- loss of appetite



There are three kinds of silicosis, based on amount of exposure and length of time.

1.Chronic

occurs after 10 or more years of mild overexposure to silica the most common of all types may go undetected for years

2. Accelerated

develops between 5 and 10 years of moderate overexposure

3. Acute

develops within weeks up to five years due to breathing very large amounts of silica

Silicosis renders the victim more susceptible to infection and diseases such as tuberculosis and lung cancer.

Smoking increases the damage. Silicosis and smoking are deadly together.

Apply Your Knowledge

Go on to Determine if Silica exposure is present in your workplace