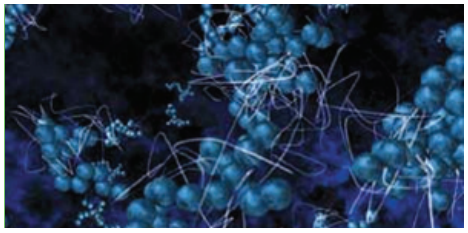
# FACT SHEET



Silica Crystals

# Silica

## introduction

Silica (silicon dioxide) is a naturally occurring mineral composed of silicon and oxygen. Silica and silicate compounds make up 90% of the earth's crust. Silica is a very stable and durable mineral which resists weathering and consists of one Silicon atom and two Oxygen atoms. It is sometimes written as SiO2.

The correct term for potentially hazardous silica is "Crystalline Silica". It may also be called crystalline quartz or free silica.

In most rocks, crystalline silica makes up only a fraction of the total silica containing materials. Other forms are silica combined with other elements (silicates) and amorphous silica. In general, these forms of silica are much less likely to cause disease, apart from the fibrous silicates such as asbestos.

## the need

Exposure to potentially harmful levels of silica is a hazard for many occupations including those associated with mining, quarrying, foundries, sandblasting, the construction of roads and tunnels, and manufacturing of stone, clay and glass products. The exposure of the general community to respirable crystalline silica is typically very low.

Occurrences of silica dust particles that are small enough to enter the alveolar region of the lungs, are common. This fine dust is called respirable dust. The component of respirable dust that is crystalline silica is called "respirable silica".

A single short-term exposure to dust containing a high concentration of silica can irritate the eyes, nose, throat and lungs. Essentially all dusts can have this effect. However, such exposure does not cause permanent injury and the effects are temporary.

Repeated and prolonged exposure over many years to relatively high concentrations of crystalline silica in the air is known to cause a lung disease called silicosis. Such exposure may occur for instance when rocks containing crystalline silica are

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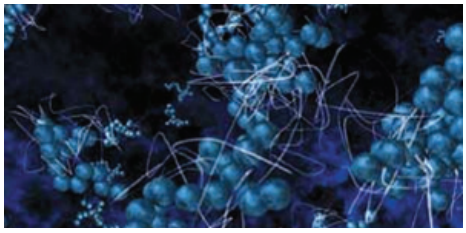

Silica Crystals

ground up during mining or quarrying operations. The disease may also occur following short-term exposure to extremely high concentrations. Such exposures are extremely unlikely to occur today given modern work practices.

In 1997 the International Agency on Cancer Research (IACR) declared occupational exposure to respirable silica as a human carcinogen after studies found a link between respirable silica exposure and Lung Cancer. Traditionally, exposure standards for silica have been set to prevent Silicosis.

The Australian Exposure Standard for Crystalline Silica is set at 0.1mg/m3—TWA 8hr by the National Occupational Health and Safety Commission (NOHSC).

## why mpl

MPL is a National Leader,  with 20+ years experience in Airborne CONTAM Monitoring and Analysis.

MPL Laboratories is NATA Accredited for Respirable Dust and Silica (Quartz and also Cristobalite) analyses under our NATA Accreditation No. 9804. Respirable Dust and Silica are analysed in accordance with Australian Standard 2985 - 2009 Workplace Atmospheres – Methods Sampling and Gravimetric Determination of Respirable Dust and NIOSH Method 7603 Quartz in coal mine dust, by IR (redeposition).

Types of Crystalline Silica:

- Quartz
- Cristobalite
- Tridymite (pictured right)

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