

EnviroNote 1124 - November 2022

Eurofins ARL is now NATA accredited for RCS by XRD



Eurofins Environment Testing, in partnership with Western Australian based laboratory Eurofins ARL, is now able offer in-house respirable crystalline silica (RCS) testing. Our RCS testing provides the low detection limits that is currently demanded with the lowering of the workplace exposure standard (WES).

We are very proud that Eurofins ARL has [NATA accreditation](#) for silica analysis in accordance with Safework Australia's guidelines.

The WA team now carries out the analysis of respirable crystalline silica by X-Ray Diffraction (XRD) according to the National Institute for Occupational Safety and Health (NIOSH) Method 7500 SILICA, CRYSTALLINE, by XRD and in-house method LTM-HYG-0001. Using the NIOSH 7500 method, we analyse samples with XRD and are able to offer a 5 µg reporting limit for α-Quartz and Cristobalite on membrane filters. Used in conjunction with a typical sampling strategy capturing 1m³, this allows a reporting limit of 0.005 mg/m³ per polymorph.



Safework Australia Guidelines

In 2020, most States and Territories lowered the workplace exposure standard (WES) for respirable crystalline silica from 0.1 mg/m³ to 0.05 mg/m³. This change was made after a health-based review of scientific evidence for silica dust showed that the WES should be reduced to prevent adverse health effects in workers, such as silicosis and lung cancer. The WES review draft evaluation report for respirable crystalline silica recommended a lower WES of 0.02 mg/m³ to minimise the risk of lung cancer that is only possible with advanced analytical instrumentation and sampling.


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Eurofins ARL's Bruker D8 ENDEAVOR is an advanced X-ray Diffraction (XRD) system equipped with a 3 kW power source that offers industry leading performance for those who desire lowest detection and quantification limits, or fastest measurement time. This instrument was purchased with the view to meeting current WES and to have access to industry leading technology for development of lower limits of reporting for future updates of the WES.

What is respirable crystalline silica?

Silica is one of the most common minerals in the earth's crust. It can be found in soil, sand, silicone, granite and glass. There are two types of silica: crystalline and non-crystalline. Crystalline silica is of particular concern because it is a human lung carcinogen that can be contracted after only a few months of high exposure.

Crystalline silica is found in sand, stone, concrete and mortar. It is also used to make a variety of products, including engineered stone for kitchen and bathroom benchtops, bricks and tiles. When workers cut, crush, drill, polish, saw or grind stone or products that contain crystalline silica, dust particles are generated. These dust particles, known as respirable crystalline silica or silica dust, are small enough to lodge deep in the lungs and cause illness or disease including silicosis.

There are three forms of crystalline silica: cristobalite, tridymite and the most popular form α -Quartz. All three are classified as a "Group 1, carcinogen to humans."



What makes the analysis of respirable crystalline silica so important?

As noted, exposure to respirable crystalline silica is extremely dangerous. It can cause numerous health problems including silicosis, lung cancer, chronic obstructive pulmonary disease and emphysema. These can all be fatal diseases.

"Silicosis is a serious, irreversible lung disease that causes permanent disability and can be fatal. When RCS comes into prolonged contact with the lung tissue, it causes inflammation and scarring and reduces the lungs' ability to take in oxygen." Reports Safework Australia. "Silicosis may continue to progress even after a worker is removed from exposure to silica dust and as the disease progresses, a worker may experience shortness of breath, a severe cough, chest pain or respiratory failure."

Logistics

The Eurofins Environment Testing network of laboratories offer accredited testing in accordance with Safework Australia's workplace exposure standard as required by clients. This compliments the already broad range of occupational hygiene testing services available, including respirable and inhalable dust, metals, diesel particulate, asbestos fibres and various inorganic and organic compounds.

For trusted Occupational Hygiene testing facilities, choose the Eurofins Environment Testing network of laboratories for quality analysis, superior customer service, and consistent reliability. To discuss logistical details for your upcoming projects, please contact your local Analytical Service Manager or one of our Business Development Team.

Contact our expert teams today

Technical advice: EnviroTechnical@eurofins.com

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Our laboratories are proudly accredited for a wide range of organic and inorganic chemistry analyses and microbiological testing.