

FACT SHEET – SILICA DUST AND SILICOSIS

A key community concern in relation to the Monaro Rock Quarry Project is the potential health risks associated with dust generated by the extraction and processing of hard rock material, and particularly the risk of developing silicosis.

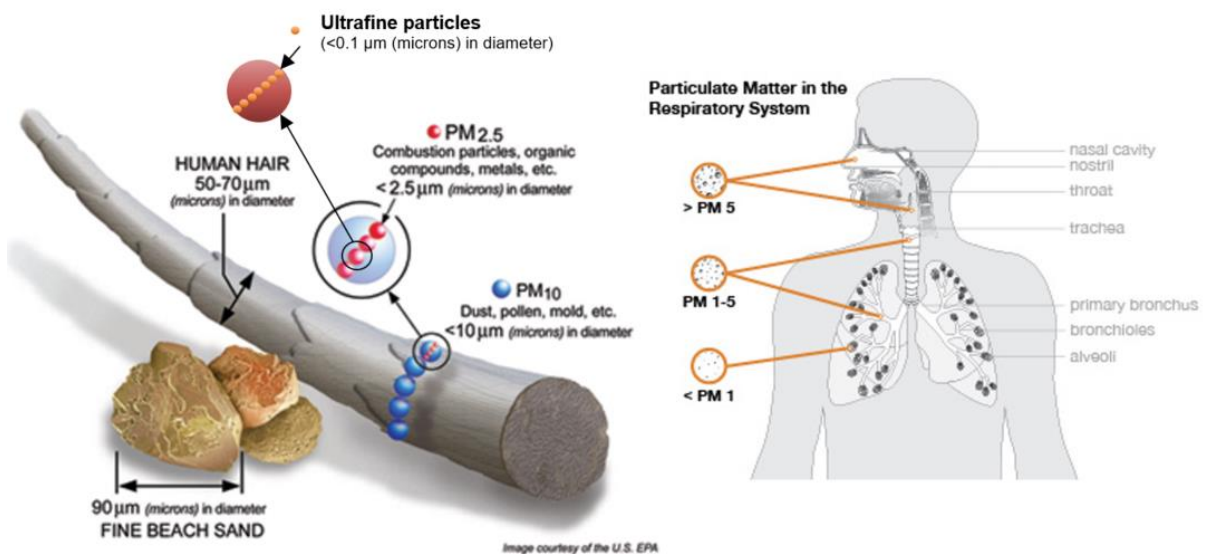
This fact sheet has been prepared by Monaro Rock to provide information about dust, silica and silicosis, and the key human health risk controls that will be implemented by Monaro Rock throughout the life of the project.

DUST AND SILICA?

Dust generated by mechanical processes used in quarrying such as the crushing and screening will disperse from the dust source as particulate matter. Particulate matter may have a range of morphological, chemical, physical and thermodynamic properties, with sizes that vary from less than 0.005 microns to greater than 100 microns. The size of the particulate matter depends on the activity. For example, very fine particles are generated by activities such as grinding or polishing, while the mechanical crushing and screening used during quarrying is more likely to generate particulate matter that is 10 µm or greater. Particulates are also generated from natural sources such as crustal dust (soil), pollen and moulds as well as other emission types such as wood smoke and diesel fumes.

Health risks associated with particulate matter depend on the size and characteristics of the material. Particulates that are 10 microns or less are considered to be respirable, that is, they have the potential to pass the body's natural defence mechanisms in the mouth, nose and upper respiratory tract and enter the lungs. The below image presents the various particulate matter sizes and penetration into the human lungs.

Silica is one of the most abundant minerals in the earth's crust and is found in stone, rock, sand, gravel, and clay, as well as products such as bricks, tiles, artificial stone benchtops and some plastics. When these materials are extracted or worked on, silica is released in dust and is known as respirable crystalline silica (RCS) or silica dust¹.



¹ Cancer Council (2021) *Silica Dust* <https://www.cancer.org.au/cancer-information/causes-and-prevention/workplace-cancer/silica-dust> [Accessed 08/04/2024]

The proposed quarry seeks to target an important deposit of rhyodacitic ignimbrite – a high-quality hard rock material valued for concrete production. A geological investigation recently undertaken as part of the environmental impact statement (EIS) for the project identified that the rhyodacitic ignimbrite contains crystalline silica in the form of quartz (SiO₂) at concentrations ranging from 30 to 40 per cent, which is typical of hard rock quarries of this kind. This means that the dust generated by the quarry may contain RCS.

WHAT IS SILICOSIS?

Respirable dust of any kind may be hazardous to human health, and repeated high levels of exposure can cause a variety of respiratory diseases. Exposure to RCS in dust can cause silicosis. Whether or not silicosis develops depends on factors such as how much RCS is in the dust, how much dust is inhaled and for how long.

Silicosis occurs when RCS is deposited in the lungs causing inflammation, resulting in a build-up of scar tissue and reduced lung capacity. Silicosis can be classed into three types.

- Chronic silicosis – caused by long-term exposure (10+ years) to low levels of RCS.
- Accelerated silicosis – caused by short-term exposure (1 – 10 years) to large amounts of RCS.
- Acute silicosis – a rare form of silicosis caused by exposure to very high concentrations of RCS over a very short period (less than 1 year).²

Links have also been made between exposure to RCS and other respiratory diseases such as chronic obstructive pulmonary disease (COPD) and lung cancer³.

Environmental or community exposures to respirable crystalline silica are much lower than those encountered in the workplace and are, in most cases, not sufficiently high to cause occupational diseases such as silicosis (CCAA, 2018). SafeWork NSW and the NSW Resources Regulator regulate workplace health and safety legislation in NSW and the EPA regulates environmental pollution including air quality. Each of these Government agencies regulate the appropriate management of air quality for quarrying and other developments to ensure that relevant workplace standards are met and that surrounding residents are not placed at risk.

PROJECT ASSESSMENTS RELATING TO DUST

Monaro Rock is committed to minimising the impacts of the project on the community. We have engaged specialist consultants to prepare the following assessments relevant to silicosis risks for the project's EIS:

- An air quality impact assessment, including the development of a dust dispersion model to predict and assess potential dust impacts on the community.
- A human health risk assessment to assess the health risks associated with the air quality outcomes for the project.

² SafeWork NSW (2024) *Crystalline silica technical fact sheet* <https://www.safework.nsw.gov.au/resource-library/hazardous-chemicals/crystalline-silica-technical-fact-sheet> [Accessed 08/04/2024]

³ Cement Concrete and Aggregates Australia (CCAA) (2018) *Workplace Health and Safety Guideline – Management of Respirable Crystalline Silica in Quarries* https://www.ccaa.com.au/CCAA/CCAA/Docs/Industry/Workplace_Health_and_Safety_Guideline_Management_of_Respirable_Crystalline_Silica_in_Quarries.aspx [Accessed 09/04/2024]

Outcomes of the specialist assessments will be communicated through the EIS and other consultation. Monaro Rock will continue to engage with the community and seek feedback as the project is developed.

SILICA DUST CONTROL MEASURES

Operating procedures will be specifically designed to minimise risks and impacts associated with RCS to workers and the community. A hierarchy of controls will be developed in consultation with specialist consultants and government agencies to ensure effective dust management in line with the NSW Work Health and Safety Regulation (2017).

SafeWork NSW (2024) recommends a range of dust management measures to minimise health and safety risks. All relevant measures will be implemented for this project. A summary of proposed dust mitigation measures is provided below. Additional measures may be recommended during the environmental impact assessment.

- Applying dust suppression to active surfaces using a water cart.
- Design controls on processing equipment such as enclosure of fixed crushing and screening equipment.
- Regular assessment of the level of personal exposure among workers performing high-risk tasks.
- Regular housekeeping in dusty work areas to prevent the accumulation of dust.
- Provision of suitable personal protective equipment (PPE), including training on how to correctly fit, use and ensure regular maintenance of respiratory protective equipment.

HOW DO I FIND OUT MORE?

Community members are encouraged to contact us with any project-related questions or ask to be included in ongoing consultation.

Enquiries may be sent directly to the project team via the Monaro Rock website (<https://monarorock.com.au/>) or to Nicholas Warren either by email at nick@rwcorkery.com or call 0437 635 975.