

Interim criteria for respirable crystalline silica concentration in ambient air for mining and extractive industries

November 2022

The EPA takes a risk-based approach to protecting the environment, in balance with social needs, sound business and economic development targets as specified in the objects of the [Environment Protection Act 1993](#). There are different tools for evaluating air quality impacts with an emphasis on adverse effects on human health and wellbeing and, where appropriate, impacts on vegetation within the context of economic and social factors.

Owners/operators or proponents are required to demonstrate that the impacts are less than the ground level concentrations (GLCs) of pollutants specified in Schedule 2 of the [Environment Protection \(Air Quality\) Policy 2016](#) (Air EPP) at sensitive receptor(s). The GLCs are levels of specific pollutants or odours, below which environmental risk can be considered to be acceptable and the EPA to have regard to GLCs when setting conditions of environmental authorisations or approvals.

Silica is silicon dioxide (SiO₂), a naturally occurring and widely abundant mineral that forms a major component of most rocks and soils. There are non-crystalline and crystalline forms of silicon dioxide. Mechanical processes such as crushing, cutting, drilling, grinding, sawing or polishing products containing silica can generate respirable particles (PM₁₀), small enough to penetrate deep into the lungs and can cause irreversible lung damage. Some of these compounds referred to as respirable crystalline silica or RCS can vary in composition and concentrations in emitted dust particles based on the composition of feed material and different mechanical processes of the industrial operation. There are a broad range of industrial activities with a potential to generate silica dust.

The [South Australian Government strategy for respirable crystalline silica \(RCS\) exposure awareness and reduction 2020](#) focuses on the worker exposure to RCS. It acknowledges that communities may be concerned about exposure to RCS from nearby industry. The current ground level concentration criteria for RCS in Schedule 2 of the Air EPP is applicable for the assessment and design of the industrial stack sources. The EPA has introduced a criterion to be used to ensure protection of communities from more diffuse sources, eg mining and extractive industries.

The EPA with other jurisdictions are supporting a broader review of air quality assessment criteria and has proposed the national harmonisation of ground level concentration criteria under the [National Clean Air Agreement Work Plan 2021–23](#). The national review is likely to be completed by 2023. The ground level concentration criteria listed under Schedule 2 of the Air EPP will be updated based on the outcome of this significant national project, using the most recent and applicable health-based science.

In the meantime, the EPA, with input from SA Health, undertook an extensive literature review of the modern criteria for RCS in ambient air for mining and extractive industries. Based on this review, the EPA is adopting an interim respirable crystalline silica (RCS) criterion of 3 µg/m³ (annual average) for the PM₁₀ size fraction of dust in ambient air, for mining

and extractive industries. The PM₁₀ size fraction selected for this RCS criterion is based on a precautionary approach, which will ensure communities are well protected from any adverse impact of RCS in ambient air.

This interim policy position is in line with the modern assessment criteria used by the EPA Victoria and other jurisdictions in Australia and overseas. With respect to development and public protection exposure to RCS, the EPA will adopt the above approach pending the outcomes of the national review and any consequent updating of the Air EPP.

Further information

Legislation

Online legislation is freely available: <https://www.legislation.sa.gov.au>

General information

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