

Summary of Oxenford Air Monitoring Investigation Report (2020–2021)

In late 2019, community members reported concerns about environmental and health impacts of dust in Oxenford on the Gold Coast. As a result, the Department of Environment and Science commenced an investigation into air quality to identify potential risks to the community.

Quarry operators in the area provided their dust monitoring data to the department for review. The department found no evidence of environmental or health risk to the neighbouring community.

In response to ongoing community concern about potential health impacts, the department launched its own 14-month [air quality monitoring project](#) (April 2020 to May 2021).

This document provides a summary of this air monitoring project. Please refer to the [Oxenford Air Monitoring Investigation Report April 2020 – May 2021](#) for full details of the report.

Monitoring

The department worked with its air quality specialists to carefully select monitoring locations to understand the exposure to the community from potential sources. (Figure 1)

To assess the potential for human health impacts, the monitoring program collected information on levels of:

- PM_{2.5} (particles less than 2.5 micrometres in diameter) and the presence of crystalline silica in the collected PM_{2.5} particles
- asbestos (at three locations during two blast events).

To assess the potential for dust nuisance impacts, the monitoring program collected information on levels of:

- deposited dust
- particle composition of deposited dust – for assessment of the contribution different particle types to overall deposited dust levels
- wind speed and direction.

To assess whether particle concentrations were higher during winds from the direction of the quarry and whether elevated particle concentrations occurred during blasting events at the quarry, the monitoring program included:

- continuous measurements of PM₁₀ (particles less than 10 micrometres in diameter) and PM_{2.5}.

Results

The Oxenford air monitoring investigation found dust emissions from the quarry were not a significant contributor to PM_{2.5} crystalline silica concentrations, PM_{2.5} concentrations or nuisance dust. Dust emissions did not result in levels exceeding the health objectives or dust nuisance guidelines during the monitoring period and the asbestos-related health risk during blasting events was negligible. (Table 1)



Figure 1: Monitoring locations

Queensland Health was engaged to review and provide comment to ensure community concerns relating to potential health impacts were adequately addressed by the monitoring of RCS and airborne asbestos.

Table 1. Oxenford monitoring results assessed against air quality criteria

Pollutant	Oxenford Monitoring Results	Air quality criterion	Averaging period	Source	Assessment
PM _{2.5}	4.3 µg/m ³	8 µg/m ³	annual	EPP Air	Health
Crystalline silica (in PM _{2.5} fraction)	0.02 µg/m ³	3 µg/m ³	annual	EPA Victoria	Health
Deposited dust	55 mg/m ² /day See Note 1	120 mg/m ² /day	averaged over 30-days	Air Impacts Guideline	Amenity
Asbestos	No fibres detected	0.1 fibres/mL*	8-hour time-weighted ave.	Safe Work Australia	Health

* occupational exposure standard (not ambient)
EPP Air = Queensland Environmental Protection (Air) Policy 2019
EPA Victoria = Environment Protection Authority Victoria
Air Impacts Guideline = Application requirements for activities with impacts to air – *Environmental Protection Act 1994*
Note 1: Highest monthly average during monitoring period

Weekly PM_{2.5} and PM_{2.5} crystalline silica monitoring

PM_{2.5} crystalline silica concentrations (inclusive of blasting events) were all below the detection limit with the exception of two samples where very low concentrations were detected during a region-wide dust event. Region-wide dust events frequently contain crystalline silica due to the high sand content of the windblown dust. There was no evidence to suggest quarry activities were a significant contributor.

Deposited dust

Deposited dust levels complied with the [Air Impacts Guideline](#) for dust nuisance. The deposited dust samples mostly comprised soil or rock particles (80 per cent or more of surface area) followed by plant and/or insect matter. Higher proportions of winds from the direction of the quarry did not correlate with an increased dust deposition level.

Asbestos

No asbestos fibres were detected at any of the three asbestos monitoring locations in the community during the two blasting events in 2021 while favourable winds occurred from direction of the quarry. This indicated negligible asbestos-related health risk from quarry blasting events during the monitoring period.

Particulate matter

Analysis of continuous particulate matter monitoring conducted by an external contractor showed during three blasting periods, there were no elevated PM_{2.5} or PM₁₀ concentrations measured at the monitoring site that would indicate a concern for human health.

Conclusion of monitoring

The department conducted this air monitoring investigation in response to concerns raised by community. While the active air monitoring activities have ceased, compliance officers remain committed to ensuring sites under regulation by the department remain compliant. Further details are available on the [Oxenford air quality monitoring project](#) page.