



Proppant Powder

The Protection & The Pain

The lurking hazards of Silicosis

Petroleum & Gas Inspectorate 17-May-2023



RSHQ

A data-driven risk based regulator.

*Our vision – a Queensland resources sector
free from fatality, serious injury and
occupational disease.*

Zero Serious Harm

Petroleum & Gas Inspectorate



Resources Safety & Health
Queensland

QLD hydraulic Fracturing Operations



Majority of proppant used is refined sand



200 Fracking operations conducted annually



Up to 450 tonnes of proppant used in each operation



Est. 24,000 – 16,500 tonnes pumped annually

Respirable Crystalline Silica (RCS) Study

QLD hydraulic fracturing operations



Decrease Workplace Exposure Standards (WES) 0.1 mg/m³ -> 0.05 mg/m³ (SWA)



Main service providers assessed



4 site surveys of hydraulic fracturing operations



Collaboration between PGI & SIMTARS



2018 - 2021



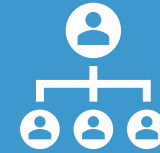
Total RCS exposure survey results



Survey population



55 workers monitored



Worker shifts 12 hr/days



Worker Rosters 2 wk on /off & 3 wk on / 2 wk off



Monitoring encompassed a variety of job roles

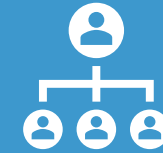
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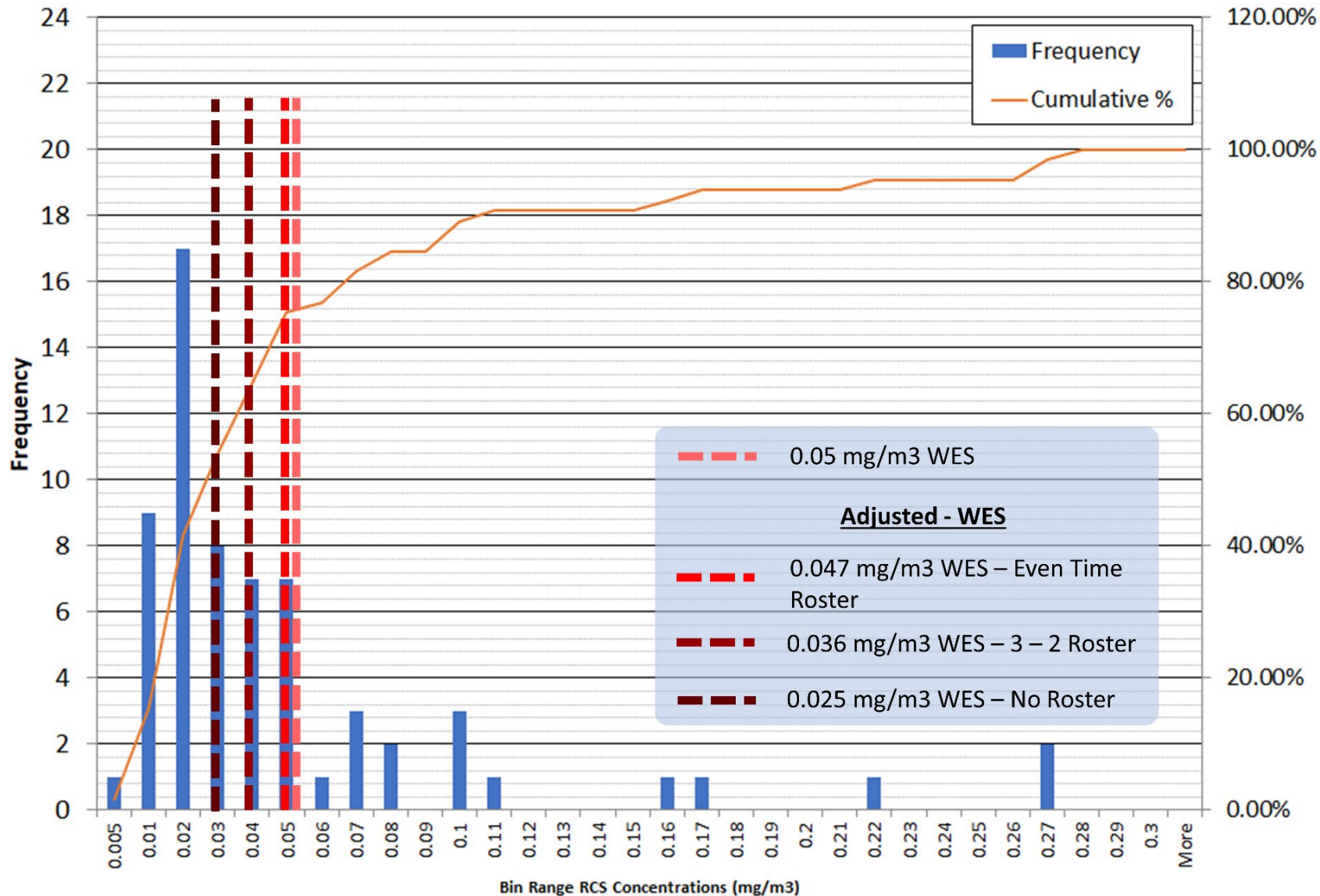
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Total RCS exposure survey results

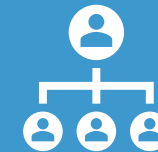
Respirable Crystalline Silica Exposure Results



Survey population



55 workers monitored



Worker shifts 12 hr/days



Worker Rosters 2 wk on /off & 3 wk on / 2 wk off



Monitoring encompassed a variety of job roles

Identified high exposure activities

Reloading Operations

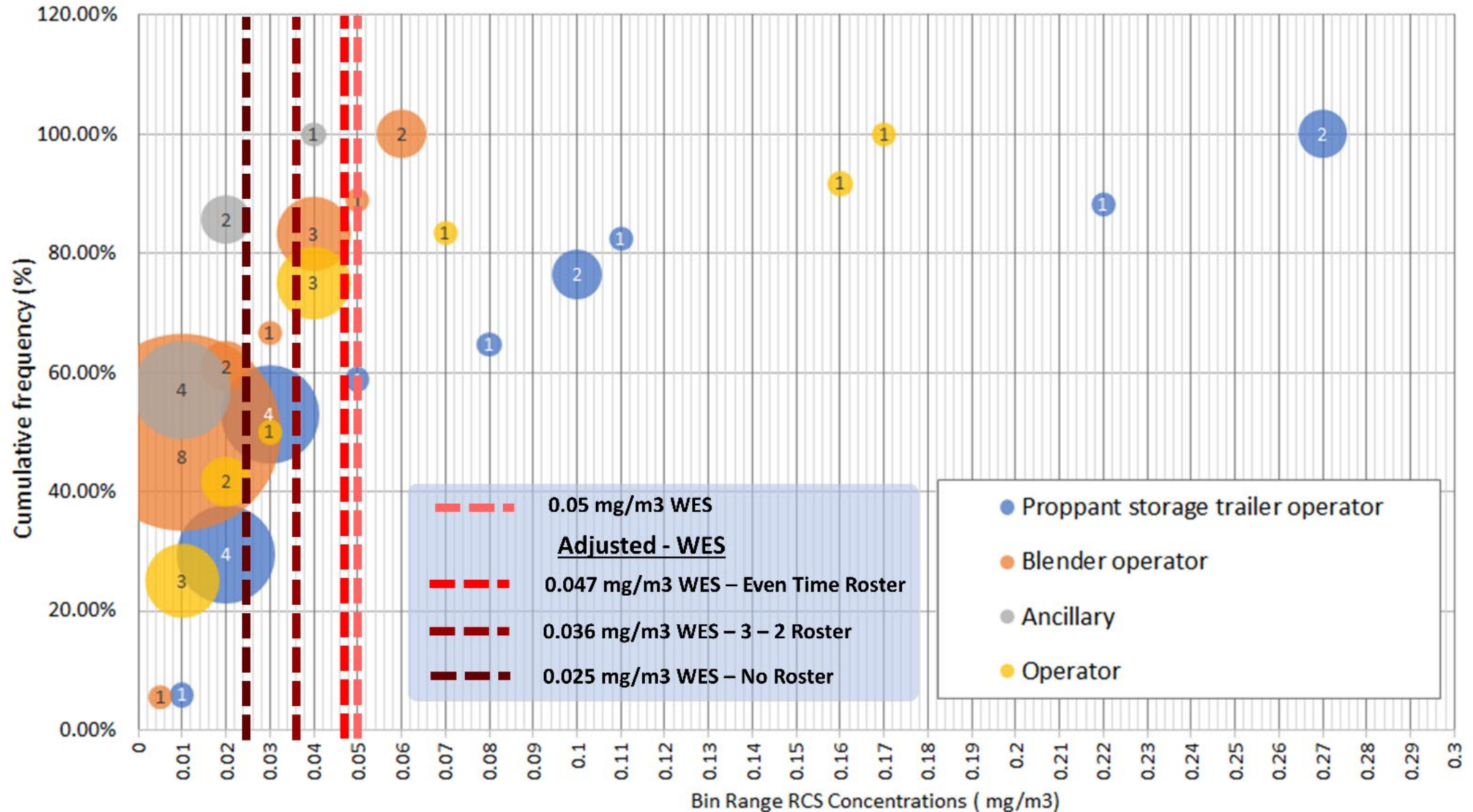


Pumping Operations

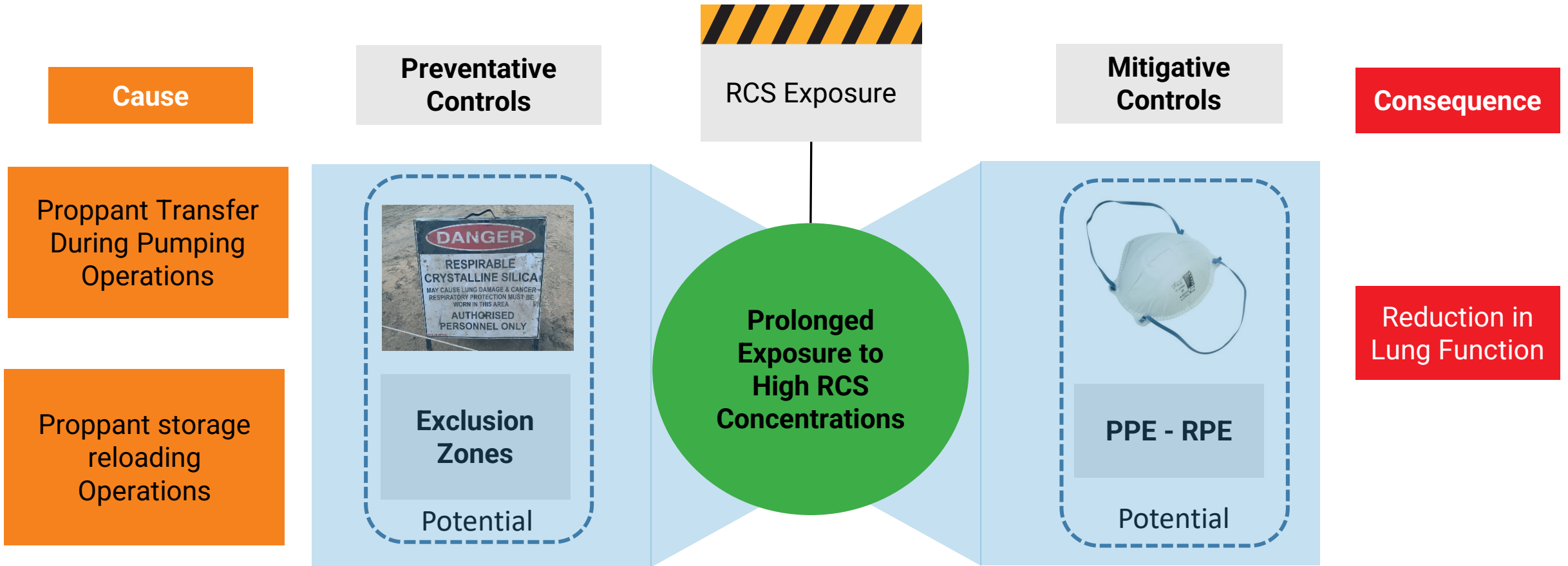


Job task categorisation survey results

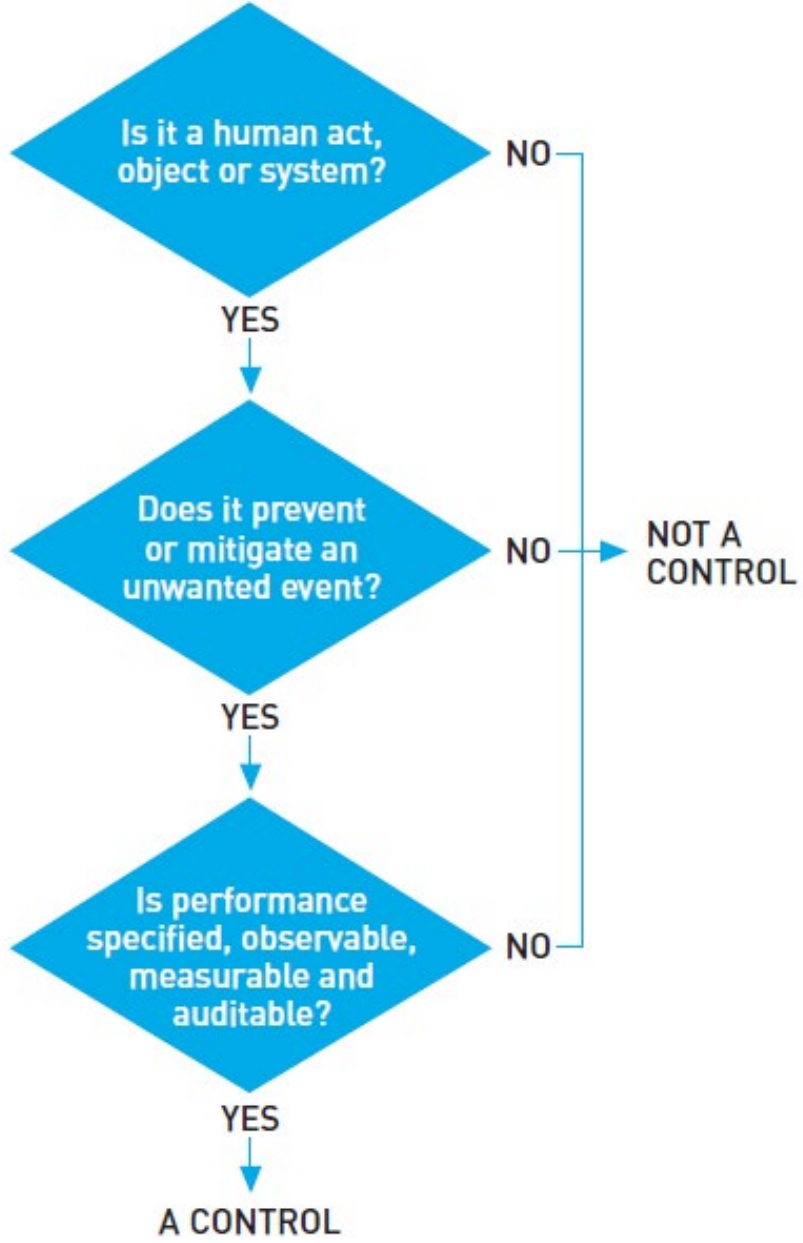
Categorised Respirable Crystalline Silica exposure results



Existing Controls



Existing Controls



Controls - Improvement

Preventative Controls



Alternative Proppant



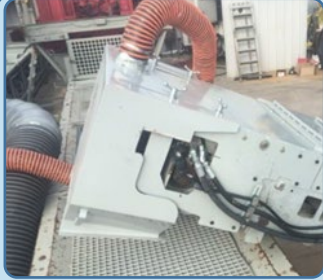
Exclusion Zones



Remote control technology



Plume Shielding



Extraction Systems



Dust Socks

RCS Exposure

Prolonged Exposure to High RCS Concentrations

Mitigative Controls



PPE - RPE



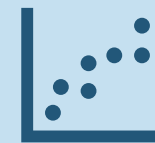
Fit Testing



Fit records



Training



Occ. Health Surveys



Health Monitoring



RCS Study Results



Improved workers awareness RCS exposure



Identified and improved control effectiveness against RCS exposure



PPE – RPE – still being heavily relied upon to protect workers



Environmental RCS exposure needs to be better understood

Takeaways



Control performance needs to be specified, observable, measurable and auditable



Future decrease WES 0.05 mg/m³ -> 0.025 mg/m³ (SWA)



“Recommended” workplace limit is half the WES



Coal Mine Workers’ Health Scheme provides industry leading respirable health monitoring for workers



SIMTARS provides industry leading dust management and monitoring services