Supplementary materials

Silica exposures and silicosis incidence in the Western Australia mining industry

Supplementary Table S1

Supplementary Table S2

Supplementary Table S3

Supplementary Figure S1

Table S1. Number of results (and percentage of total results) recorded in the SRS Database for respirable crystalline silica (RCS) for years 1986-2023 by mining commodity type.

Commodity	No. of RCS results	% of total results
Gold	57209	43.4
Iron Ore	33565	25.5
Nickel	11680	8.9
Construction Materials	6166	4.7
Copper - Lead - Zinc	4444	3.4
Tin - Tantalum - Lithium	4031	3.1
Diamond	3197	2.4
Bauxite - Alumina	3072	2.3
Heavy Mineral Sands	2592	2.0
Silica - Silica Sand	1922	1.5
Coal	1001	0.8
Manganese Ore	783	0.6
Phosphate	388	0.3
Talc	282	0.2
Rare Earths	247	0.2
Limestone - Limesand	207	0.2
Clays	201	0.2
Salt	198	0.2
Chromite - Platinoids	120	0.1
Dimension Stone	108	0.1
Vanadium - Titanium	101	0.1
Gypsum	77	0.1
Chemicals	69	0.1
Tungsten - Molybdenum	41	<0.1
Diatomite - Spongolite	36	<0.1
Pigments	23	<0.1
Silver	17	<0.1

Supplementary Table S2. Compliance with adjusted workplace exposure standard* (AES) of the period , median and geometric mean (GM) for the time-weighted average of respirable crystalline silica (RCS) for periods between 1986-2023

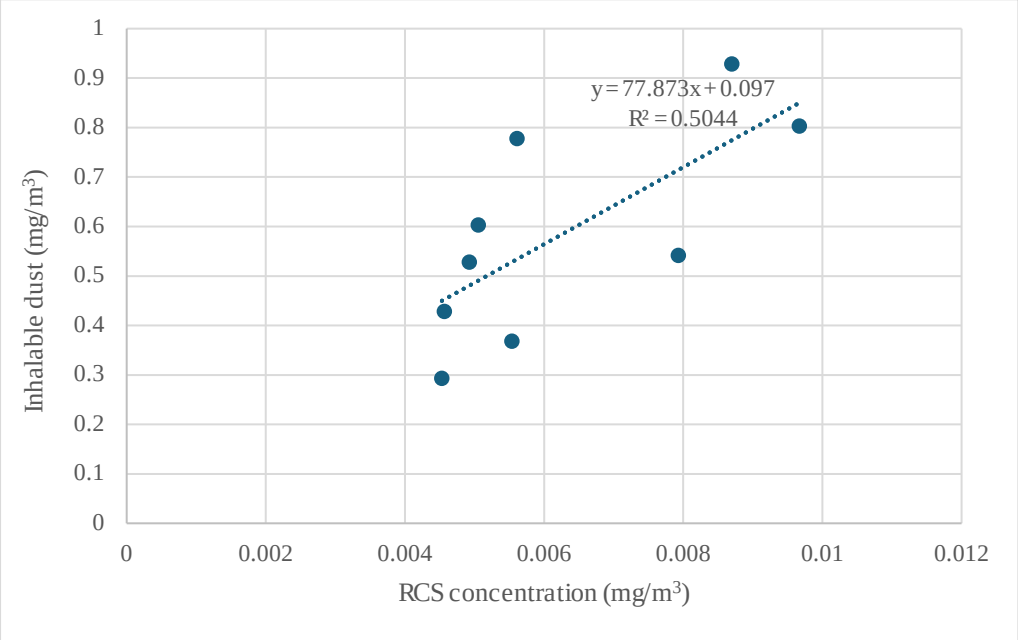
Period	**RCS exposure standard (mg/m^3)**	**No. of RCS results**	**No. of exceedances of AES**	**Compliance (% results exceeding AES)**	**Median RCS (mg/m^3)**	**Geometric mean RCS (mg/m^3)**
1986-2015	0.1	87101	4343	5	0.010	0.009
2016-2020	0.1	28137	619	2	0.007	0.007
2021-2023	0.05	20025	1098	5	0.005	0.006
1986-2023	mixed	135263	6060	4	0.010	0.008

*exposure standard adjusted for shift length and shift pattern on an individual basis for each worker's RCS result using the Québec Model

Supplementary Table S3. RCS results by concentration range

Years 1986-2023			
RCS (mg/m^3)	**No. of results**	**% of total results**	**Cumulative % of results**
>10	18	0.02	0.02
>1-10	415	0.3	0.32
>0.5-1.0	706	0.5	0.82
>0.1-0.5	6508	5.0	5.82
>0.05-0.1	7225	5.5	11.32
>0.02-0.05	12285	9.4	20.7
=<0.02	103750	79.3	100
Years 2021-2023			
RCS (mg/m3)	**No. of results**	**% of total results**	**Cumulative % of results**
>10	2	0.01	0.01
>1-10	2	0.01	0.02
>0.5-1.0	17	0.11	0.13
>0.1-0.5	213	1.34	1.47
>0.05-0.1	357	2.25	3.72
>0.02-0.05	1138	7.16	10.88
=<0.02	14172	89.12	100

Supplementary Figure S1. Relationship between geometric means of inhalable dust exposure and RCS exposure of the 9 job types shown in Table 2 of main paper.



Data from 1991 (date inhalable dust first introduced as a parameter in SRS Database) to 2023. Regression analysis, t=2.67, P<0.0.05. Correlation analysis, Pearson r = 0.78, P<0.001