

Table 3-21. Respirable cristobalite: Geometric mean exposures and percent exceeding designated occupational exposure limits, MSHA and OSHA samples, 1979-1999

	OSHA PEL: see note										OSHA PEL = 0.05 mg/m ³				OSHA PEL: see note						
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Cristobalite, respirable - MSHA																					
GM (mg/m ³)	0.056	0.050	0.031	0.055	0.037	0.035	0.024	0.025	0.032	0.027	0.032	0.037	0.028	0.020	0.031	0.065	0.033	0.020	0.030	0.015	0.010
No. of samples	12	53	21	5	34	26	23	10	14	22	28	19	13	22	23	12	3	12	7	5	1
% > PEL	58.3	54.7	42.9	100.0	44.1	23.1	26.1	10.0	14.3	31.8	28.6	52.6	46.2	9.1	30.4	66.7	0.0	8.3	28.6	0.0	0.0
% > REL	50.0	43.4	28.6	60.0	23.5	15.4	13.0	10.0	14.3	22.7	21.4	36.8	30.8	0.0	26.1	50.0	0.0	8.3	28.6	0.0	0.0
Cristobalite, respirable - OSHA																					
GM (mg/m ³)	0.033	0.020	0.022	0.022	0.027	0.020	0.024	0.021	0.022	0.020	0.021	0.021	0.021	0.021	0.020	0.032	0.024	0.021	0.021	0.020	0.023
No. of samples	26	193	101	84	26	62	112	78	52	61	101	90	51	154	48	52	39	26	47	26	37
% > PEL	19.2	0.0	3.0	4.8	7.7	0.0	8.0	2.6	1.9	1.6	0.0	2.2	2.0	1.9	0.0	19.2	7.7	7.7	6.4	0.0	8.1
% > REL	19.2	0.0	3.0	4.8	7.7	0.0	7.1	2.6	1.9	1.6	0.0	2.2	2.0	1.9	0.0	19.2	7.7	0.0	2.1	0.0	8.1

– indicates incalculable field

PEL - permissible exposure limit

REL - recommended exposure limit

GM - geometric mean

mg/m³ - milligrams per cubic meter

NOTE: Before March 1, 1989 and after March 22, 1993, the OSHA PEL is [(5 mg/m³) / (% cristobalite + 2)], for respirable dust containing at least 1 percent cristobalite. From March 1, 1989 to March 22, 1993, the OSHA PEL was 0.05 mg/m³ for respirable cristobalite. For metal/nonmetal mining, the MSHA PEL is [(5 mg/m³) / (% cristobalite + 2)] for respirable dust containing at least 1 percent cristobalite. The NIOSH REL is 0.05 mg/m³. See appendices for source description, methods, and agents.

SOURCE: Mine Safety and Health Administration (MSHA) metal/nonmetal mine data. Occupational Safety and Health Administration (OSHA) Integrated Management Information System.