

Table 2-14. Respirable coal mine dust: Geometric mean exposures and percent exceeding designated occupational exposure limits by type of facility, MSHA inspector and mine operator samples, 1979-1999

Type of Facility and Sample Source																		NIOSH REL = 1.0 mg/m ³ MRE				
		1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Underground Coal Mine Inspector Samples	GM (mg/m ³)	0.815	0.732	0.643	0.658	0.587	0.646	0.602	0.653	0.684	0.634	0.607	0.566	0.690	0.693	0.599	0.623	0.644	0.665	0.667	0.566	0.574
	No. of samples	1,897	13,125	13,533	13,882	13,588	12,884	13,115	13,010	13,118	14,372	13,608	12,450	10,912	10,709	9,582	10,334	11,919	11,826	16,441	23,689	33,419
	% > PEL	19.1	14.6	11.5	10.4	9.5	11.1	10.2	11.4	11.3	10.1	9.8	8.5	11.0	10.0	7.4	8.3	8.6	8.3	7.8	6.5	5.3
	% > REL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.5	33.2	32.4	26.5
Underground Coal Mine Operator Samples	GM (mg/m ³)	0.638	0.553	0.602	0.573	0.517	0.525	0.519	0.536	0.543	0.526	0.503	0.502	0.624	0.618	0.610	0.553	0.547	0.535	0.513	0.456	0.506
	No. of samples	166,582	190,771	31,337	68,926	69,591	70,222	66,473	65,948	65,197	66,098	65,169	65,403	62,729	60,749	55,960	52,835	47,892	43,300	42,375	41,601	37,663
	% > PEL	17.0	15.4	14.7	12.8	10.5	10.2	10.0	10.7	10.8	9.4	8.9	8.5	11.9	10.9	10.8	10.5	10.3	9.6	9.2	8.9	9.0
	% > REL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.2	30.7	29.4	28.9
Surface Coal Mine Inspector Samples	GM (mg/m ³)	0.702	0.707	0.349	0.384	0.367	0.384	0.370	0.378	0.394	0.409	0.335	0.332	0.372	0.325	0.272	0.263	0.241	0.242	0.251	0.196	0.188
	No. of samples	472	3,578	16,164	13,098	12,684	13,333	13,036	10,957	9,833	9,176	8,089	8,135	5,165	4,762	5,983	6,458	6,032	6,713	7,761	9,449	10,524
	% > PEL	16.3	14.8	5.2	5.7	6.3	7.7	5.9	5.9	5.9	6.4	4.5	4.4	4.6	4.1	2.8	2.4	1.8	1.4	1.3	1.0	1.1
	% > REL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4	7.3	7.3	5.5
Surface Coal Mine Operator Samples	GM (mg/m ³)	0.646	0.556	0.474	0.418	0.406	0.413	0.392	0.429	0.429	0.442	0.434	0.405	0.457	0.473	0.499	0.418	0.373	0.327	0.315	0.238	0.281
	No. of samples	38,479	47,107	16,730	37,744	35,548	37,998	32,467	26,016	20,346	14,547	12,546	11,701	10,202	6,158	5,153	5,278	4,563	4,830	4,959	4,543	4,480
	% > PEL	17.0	15.7	9.1	8.1	8.1	8.4	7.2	7.6	8.1	6.9	6.8	5.7	8.0	6.9	8.1	6.6	4.8	3.6	3.7	2.2	3.4
	% > REL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.0	16.1	15.6	12.2

- indicates incalculable field

PEL - permissible exposure limit REL - recommended exposure limit GM - geometric mean mg/m³ - milligrams per cubic meter

MRE - Mining Research Establishment

NOTE: In coal mining, for respirable dust containing less than 5% quartz, the MSHA PEL is 2 mg/m³ MRE; for respirable dust containing greater than 5% quartz, the MSHA PEL is [(10 mg/m³ MRE) / (% quartz)]. The NIOSH REL of 1 mg/m³ MRE for respirable coal mine dust was adopted in September of 1995. Geometric means are reported in MRE equivalent. All samples are compared to the MSHA PEL of 2 mg/m³ MRE for respirable coal mine dust containing less than 5% quartz, regardless of actual quartz content. See appendices for source description, methods, and agents.

SOURCE: Mine Safety and Health Administration (MSHA) coal mine inspector and mine operator dust data.