

Respirable quartz: Geometric mean exposures and percent exceeding designated occupational exposure limits in coal mining by MSHA coal mine district and state, MSHA inspector and mine operator samples, 1982–2003 (page 1 of 3)

	All years			1982–1988			1989–1992			1993–2003		
	No. of Samples	(GM mg/m ³ MRE)	% > PEL*	No. of Samples	(GM mg/m ³ MRE)	% > PEL*	No. of Samples	(GM mg/m ³ MRE)	% > PEL*	No. of Samples	(GM mg/m ³ MRE)	% > PEL*
MSHA Coal Mine District												
District 1 (Anthracite coal mining regions in Pennsylvania)	2,185	0.017	38.8	299	0.021	38.8	171	0.021	37.4	1,715	0.017	17.4
District 2 (Bituminous coal mining regions in Pennsylvania)	16,941	0.035	33.7	3,843	0.042	33.7	2,207	0.039	23.2	10,891	0.032	14.7
District 3	15,753	0.031	27.7	3,680	0.031	27.7	1,684	0.037	20.7	10,389	0.030	14.2
Maryland	1,108	0.034	40.0	120	0.056	40.0	45	0.037	4.4	943	0.032	12.8
Ohio	5,356	0.034	32.2	1,871	0.038	32.2	719	0.036	21.7	2,766	0.031	14.6
Northern West Virginia	9,289	0.029	21.8	1,689	0.024	21.8	920	0.038	20.7	6,680	0.029	14.2
District 4 (Southern West Virginia)	27,718	0.053	39.1	6,802	0.051	39.1	3,900	0.055	35.8	17,016	0.053	27.5
District 5 (Virginia)	17,991	0.051	44.3	4,264	0.056	44.3	2,795	0.057	36.6	10,932	0.048	22.0
District 6 (Eastern Kentucky)	21,839	0.050	39.8	2,706	0.050	39.8	2,529	0.066	41.2	16,604	0.048	24.3
District 7	21,732	0.050	49.0	2,729	0.067	49.0	3,008	0.056	36.4	15,995	0.046	23.5
Central Kentucky	0	-	-	0	-	-	0	-	-	0	-	-
Northern Georgia	19,421	0.050	50.2	2,232	0.069	50.2	2,486	0.058	37.2	14,703	0.046	23.4
North Carolina	0	-	-	0	-	-	0	-	-	0	-	-
South Carolina	0	-	-	0	-	-	0	-	-	0	-	-
Tennessee	2,311	0.048	43.3	497	0.057	43.3	522	0.050	32.6	1,292	0.045	23.6
District 8	9,722	0.041	33.5	2,004	0.046	33.5	1,414	0.040	19.9	6,304	0.040	22.3
Illinois	7,913	0.040	32.3	1,616	0.046	32.3	1,262	0.039	18.8	5,035	0.038	20.4
Indiana	1,717	0.049	37.9	330	0.051	37.9	140	0.053	30.7	1,247	0.048	30.0
Iowa	54	0.024	38.5	39	0.023	38.5	9	0.027	22.2	6	0.022	-
Michigan	0	-	-	0	-	-	0	-	-	0	-	-
Minnesota	0	-	-	0	-	-	0	-	-	0	-	-
Northern Missouri	38	0.052	47.4	19	0.075	47.4	3	0.031	-	16	0.036	31.3
Wisconsin	0	-	-	0	-	-	0	-	-	0	-	-

See footnotes at end of table.

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MSHA Coal Mine District	All years		1982–1988			1989–1992			1993–2003		
	No. of Samples	(GM mg/m ³ MRE)	No. of Samples	(GM mg/m ³ MRE)	% > PEL*	No. of Samples	(GM mg/m ³ MRE)	% > PEL*	No. of Samples	(GM mg/m ³ MRE)	% > PEL*
District 9	7,043	0.029	1,296	0.038	40.4	1,210	0.028	32.6	4,537	0.027	16.1
Alaska	13	0.019	10	0.014	10.0	2	0.051	50.0	1	0.056	-
Arizona	50	0.045	6	0.023	33.3	10	0.050	40.0	34	0.049	14.7
Arkansas	19	0.043	6	0.120	66.7	1	0.009	100.0	12	0.029	16.7
California	1	0.025	0	-	-	0	-	-	1	0.025	-
Colorado	2,227	0.031	424	0.039	42.9	380	0.030	34.2	1,423	0.030	16.0
Hawaii	0	-	0	-	-	0	-	-	0	-	-
Idaho	0	-	0	-	-	0	-	-	0	-	-
Kansas	32	0.044	8	0.120	75.0	7	0.027	-	17	0.034	5.9
Louisiana	27	0.008	0	-	-	2	0.038	-	25	0.007	-
Southern Missouri	59	0.038	14	0.096	57.1	4	0.077	25.0	41	0.026	9.8
Montana	136	0.027	34	0.036	38.2	11	0.048	54.5	91	0.022	20.9
Nebraska	0	-	0	-	-	0	-	-	0	-	-
Nevada	0	-	0	-	-	0	-	-	0	-	-
New Mexico	425	0.034	113	0.050	35.4	42	0.052	38.1	270	0.027	12.6
North Dakota	57	0.009	27	0.011	11.1	14	0.008	14.3	16	0.009	6.3
Oklahoma	423	0.057	149	0.118	61.1	62	0.065	38.7	212	0.033	17.9
Oregon	0	-	0	-	-	0	-	-	0	-	-
Texas	162	0.027	48	0.095	56.3	24	0.015	25.0	90	0.016	13.3
Utah	2,667	0.027	292	0.029	34.9	549	0.025	32.1	1,826	0.027	16.4
Washington	23	0.027	2	0.017	-	9	0.019	-	12	0.038	16.7
Wyoming	722	0.020	163	0.016	27.6	93	0.019	29.0	466	0.021	18.2

See footnotes at end of table.

Respirable quartz: Geometric mean exposures and percent exceeding designated occupational exposure limits in coal mining by MSHA coal mine district and state, MSHA inspector and mine operator samples, 1982–2003 (page 3 of 3)

MSHA Coal Mine District	All years		1982–1988		1989–1992		1993–2003	
	No. of Samples	(GM mg/m ³ MRE)	No. of Samples	(GM mg/m ³ MRE)	No. of Samples	(GM mg/m ³ MRE)	No. of Samples	(GM mg/m ³ MRE)
District 10 (Western Kentucky)	6,973	0.022	1,137	0.020	904	0.022	4,932	0.022
				% > PEL*		% > PEL*		% > PEL*
District 11	5,234	0.041	519	0.053	704	0.058	4,011	0.038
Alabama	5,234	0.041	519	0.053	704	0.058	4,011	0.038
Central and Southern Georgia	0	-	0	-	0	-	0	-
Florida	0	-	0	-	0	-	0	-
Mississippi	0	-	0	-	0	-	0	-
Puerto Rico	0	-	0	-	0	-	0	-
Virgin Islands	0	-	0	-	0	-	0	-
TOTAL	153,131	0.042	29,279	0.046	20,526	0.047	103,326	0.040
				37.8		31.9		21.1

- indicates incalculable field. PEL - permissible exposure limit REEL - recommended exposure limit GM - geometric mean mg/m³ - milligrams per cubic meter
MRE - Mining Research Establishment MSHA - Mine Safety and Health Administration
* Samples selected based on the respirable dust level and MSHA PEL (2 mg/m³ MRE or adjusted PEL).
NOTE: The MSHA PEL is 2 mg/m³ MRE for respirable dust containing less than or equal to 5 percent quartz. The PEL is adjusted using the formula [(10 mg/m³ MRE) / (% quartz)] for respirable dust containing greater than 5 percent quartz. See appendices for source description and methods.
SOURCE: MSHA coal mine inspector and mine operator quartz data.