NIOSH 1999

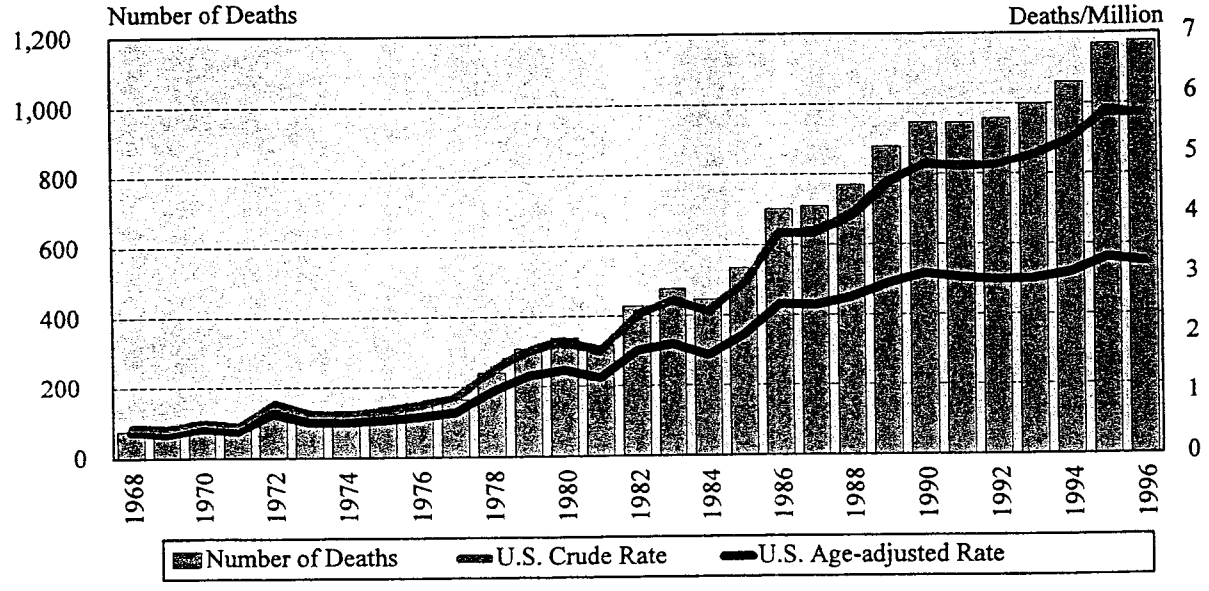
Work-Related Lung Disease Surveillance Report -1999

Section 1

ASBESTOSIS and RELATED EXPOSURES

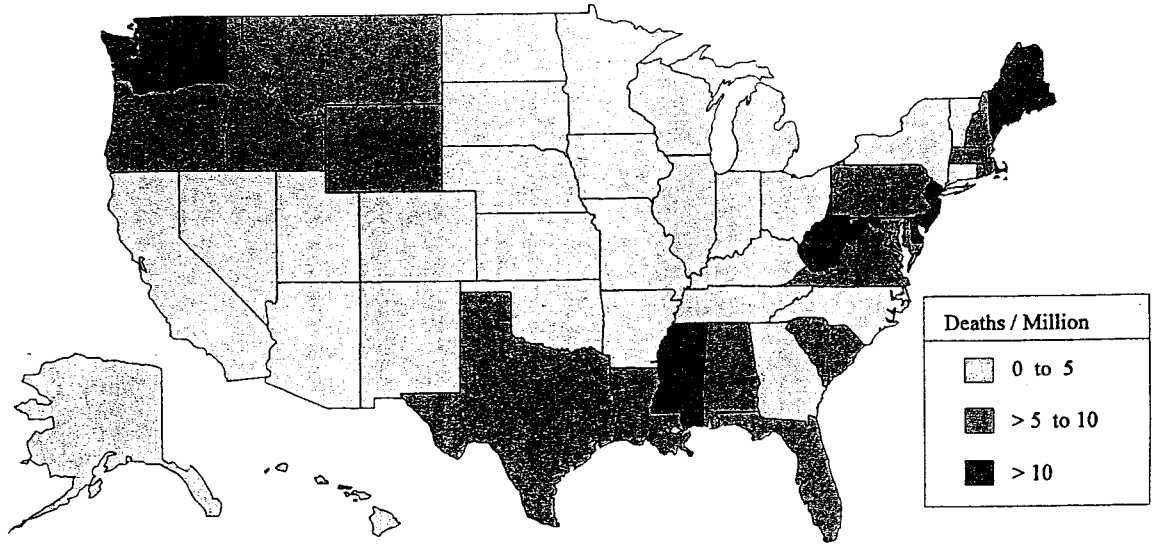
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Figure 1-1. Asbestosis: Number of deaths, crude and age-adjusted mortality rates, U.S. residents age 15 and over, 1968-1996



NOTE: See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data. Population estimates from U.S. Bureau of the Census.

Figure 1-2. Asbestosis: Crude mortality rates by state, U.S. residents age 15 and over, 1987-1996



NOTE: See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data. Population estimates from U.S. Bureau of the Census.

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Table 1-1. Asbestosis: Number of deaths by sex, race and age, U.S. residents age 15 and over, 1987-1996

Year	Sex		Race			Age Group (yrs)								Total	Median Age (yrs)
	Male	Female	White	Black	Other	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+		
1987	683	27	676	31	3	-	-	3	23	134	283	219	48	710	72.0
1988	742	27	717	48	4	-	-	1	20	141	310	235	62	769	72.0
1989	849	29	807	62	9	-	-	4	18	116	364	307	69	878	73.0
1990	901	47	864	78	6	-	-	4	18	142	359	336	89	948	74.0
1991	908	38	877	63	6	1	-	1	25	114	370	358	77	946	74.0
1992	923	36	898	57	4	-	-	3	13	124	371	355	93	959	74.0
1993	969	30	934	58	7	-	-	1	20	110	.365	396	107	999	75.0
1994	1,026	34	993	62	5	-	-	2	21	94	410	422	111	1,060	75.0
1995	1,138	31	1,095	69	5	-	-	3	24	118	411	477	136	1,169	75.0
1996	1,123	53	1,088	84	4	-	-	3	16	104	428	480	145	1,176	75.0
Total	**9,262**	**352**	**8,949**	**612**	**53**	**1**	**-**	**25**	**198**	**1,197**	**3,671**	**3,585**	**937**	**9,614**	**74.0**

- indicates no deaths listed.
NOTE: See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data

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Table 1-2. Asbestosis: Mortality rates (per 1,000,000 population) by race and sex, U.S. residents age 15 and over, 1987-1996

Year	Overall rate	White		Black	
		Males	Females	Males	Females
	Crude mortality rate				
1987	3.73	8.27	0.31	3.03	0.09
1988	4.00	8.76	0.28	4.49	0.26
1989	4.54	9.83	0.29	5.72	0.34
1990	4.85	10.23	0.51	7.40	0.17
1991	4.80	10.42	0.42	5.86	0.16
1992	4.82	10.63	0.37	5.00	0.32
1993	4.97	11.03	0.32	5.19	0.16
1994	5.22	11.62	0.35	5.38	0.23
1995	5.70	12.74	0.35	6.19	-
1996	5.67	12.26	0.57	7.22	0.15
1987-1996	**4.83**	**10.58**	**0.38**	**5.55**	**0.19**
	Age-adjusted mortality rate				
1987	2.49	5.95	0.17	3.13	0.05
1988	2.62	6.21	0.14	4.56	0.24
1989	2.84	6.70	0.14	5.75	0.21
1990	3.01	6.90	0.25	7.41	0.15
1991	2.94	6.91	0.20	5.79	0.14
1992	2.90	6.93	0.17	4.99	0.28
1993	2.91	7.01	0.16	4.92	0.09
1994	3.02	7.25	0.15	5.50	0.13
1995	3.27	7.91	0.15	5.68	-
1996	3.20	7.46	0.24	7.11	0.14
1987-1996	**2.91**	**6.91**	**0.18**	**5.49**	**0.14**

- indicates no deaths listed.
NOTE: See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data. Population estimates from U.S. Bureau of the Census.

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Table 1-3. Asbestosis: Years of potential life lost to age 65 and to life expectancy, by race and sex, U.S. residents age 15 and over, 1987-1996

Year	Overall	White		Black	
		Males	Females	Males	Females
	Years of potential life lost to age 65				
1987	1,090	980	30	80	-
1988	1,030	935	30	60	5
1989	950	840	5	80	15
1990	1,080	930	25	90	25
1991	1,015	845	30	130	-
1992	890	780	15	50	30
1993	875	820	20	35	-
1994	835	710	15	110	-
1995	1,025	930	10	55	-
1996	835	715	25	70	-
Total	**9,625**	**8,485**	**205**	**760**	**75**
	Years of potential life lost to life expectancy				
1987	9,455	7,545	355	358	9
1988	9,992	7,900	303	471	48
1989	11,120	8,658	317	626	50
1990	11,949	9,038	558	771	51
1991	11,884	9,294	466	664	28
1992	11,975	9,419	392	546	81
1993	11,960	9,541	357	529	17
1994	12,636	10,074	353	657	29
1995	13,878	11,245	351	637	-
1996	13,743	10,741	571	840	28
Total	**118,591**	**93,453**	**4,023**	**6,097**	**340**

- indicates no deaths listed.
NOTE: The sum of individual years may not equal total due to rounding. See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data.

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Table 1-4. Asbestosis: Number of deaths by state, U.S. residents age 15 and over, 1987-1996

State	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total
Alabama	6	10	22	21	23	18	23	29	36	43	**231**
Alaska	-	-	2	1	1	1	2	2	-	2	**11**
Arizona	8	7	3	6	6	8	12	9	13	13	**85**
Arkansas	10	4	1	4	6	5	9	5	9	6	**59**
California	80	81	87	102	94	95	93	101	113	100	**946**
Colorado	3	6	3	4	5	4	7	12	6	13	**63**
Connecticut	9	10	14	11	14	17	8	7	13	18	**121**
Delaware	3	8	13	6	14	8	8	12	10	10	**92**
District of Columbia	1	-	-	-	1	-	1	2	-	1	**6**
Florida	41	59	56	43	54	52	39	60	67	84	**555**
Georgia	12	8	6	13	10	18	9	12	11	9	**108**
Hawaii	3	3	6	3	4	4	1	2	5	1	**32**
Idaho	6	4	5	4	6	3	2	3	4	4	**41**
Illinois	10	11	26	18	20	21	24	22	21	17	**190**
Indiana	3	5	5	8	4	4	4	6	6	7	**52**
Iowa	6	2	2	4	3	7	3	8	8	4	**47**
Kansas	5	3	5	2	3	7	9	5	10	6	**55**
Kentucky	3	4	4	1	5	5	11	5	3	9	**50**
Louisiana	7	12	20	20	20	14	20	15	18	20	**166**
Maine	9	12	8	17	8	8	13	12	8	6	**101**
Maryland	18	16	24	36	27	33	35	44	53	50	**336**
Massachusetts	31	30	43	36	27	48	25	45	40	39	**364**
Michigan	11	7	11	17	15	16	16	17	27	21	**158**
Minnesota	4	11	5	8	6	17	19	17	18	7	**112**
Mississippi	12	15	17	16	25	25	20	25	34	33	**222**
Missouri	7	11	7	9	11	14	18	13	11	11	**112**
Montana	1	2	8	6	2	4	4	4	-	4	**35**
Nebraska	5	2	2	3	3	2	6	4	4	2	**33**
Nevada	3	1	-	2	3	1	3	6	5	5	**29**
New Hampshire	6	8	2	2	1	4	8	6	6	4	**47**
New Jersey	80	83	102	115	93	80	80	81	93	109	**916**
New Mexico	4	2	5	2	3	1	3	6	8	2	**36**
New York	30	29	32	44	37	30	26	34	43	42	**347**
North Carolina	17	12	17	25	21	25	12	32	29	33	**223**
North Dakota	-	-	1	-	3	-	2	3	-	3	**12**
Ohio	21	12	23	27	24	32	29	31	35	43	**277**
Oklahoma	5	5	8	6	6	5	1	5	5	5	**51**
Oregon	18	21	17	12	22	22	29	26	18	30	**215**
Pennsylvania	65	79	101	67	83	100	114	90	114	106	**919**
Rhode Island	-	11	5	7	1	5	4	6	5	2	**46**
South Carolina	8	14	18	11	8	13	21	13	17	18	**141**
South Dakota	-	-	-	-	-	-	-	-	-	3	**3**
Tennessee	4	12	5	6	8	4	8	13	12	14	**86**
Texas	48	46	49	91	95	54	72	80	93	87	**715**
Utah	2	1	2	3	-	4	5	2	4	5	**28**
Vermont	2	1	-	1	-	3	3	-	2	2	**14**
Virginia	22	35	35	47	36	43	47	38	44	37	**384**
Washington	40	34	37	34	50	40	59	60	44	48	**446**
West Virginia	15	15	6	17	20	28	18	20	32	32	**203**
Wisconsin	4	4	7	9	11	6	10	9	10	3	**73**
Wyoming	2	1	1	1	4	1	4	1	2	3	**20**
TOTAL	**710**	**769**	**878**	**948**	**946**	**959**	**999**	**1,060**	**1,169**	**1,176**	**9,614**

- indicates no deaths listed.
NOTE: See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data.

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Table 1-5. Asbestosis: Total number of deaths, crude and age-adjusted mortality rates (per 1,000,000 population), and total years of potential life lost (YPLL) to life expectancy, by state, U.S. residents age 15 and over, 1987-1996

State	Total deaths	Rank	Crude mortality		Age-adjusted mortality		YPLL to life expectancy			
			Rate	Rank	Rate	Rank	Total	Rank	YPLL/death	Rank
Alabama	231	12	7.19	12	4.49	11	3,064	12	13.3	11
Alaska	11	49	2.59	36	4.03	12	172	48	15.6	1
Arizona	85	28	2.88	31	1.66	34	1,056	28	12.4	24
Arkansas	59	31	3.18	28	1.93	31	842	30	14.3	3
California	946	1	3.95	24	2.64	24	11,174	2	11.8	41
Colorado	63	30	2.37	39	1.69	33	785	31	12.5	23
Connecticut	121	21	4.54	22	2.65	23	1,485	22	12.3	33
Delaware	92	26	16.91	1	10.77	1	1,201	25	13.1	13
District of Columbia	6	50	1.20	49	0.80	49	77	50	12.8	17
Florida	555	5	5.04	20	2.25	25	6,638	5	12.0	40
Georgia	108	24	2.07	45	1.66	35	1,522	21	14.1	4
Hawaii	32	43	3.54	25	2.21	26	378	44	11.8	42
Idaho	41	39	5.26	18	3.17	19	501	39	12.2	35
Illinois	190	17	2.10	44	1.30	44	2,392	16	12.6	21
Indiana	52	33	1.18	50	0.74	50	663	33	12.8	18
Iowa	47	36	2.16	43	1.09	47	563	37	12.0	39
Kansas	55	32	2.85	32	1.47	40	632	35	11.5	43
Kentucky	50	35	1.71	48	1.06	48	637	34	12.7	19
Louisiana	166	18	5.17	19	3.43	17	2,147	19	12.9	15
Maine	101	25	10.33	6	5.39	7	1,126	27	11.1	46
Maryland	336	10	8.62	9	6.39	6	4,521	8	13.5	8
Massachusetts	364	8	7.50	11	3.98	13	4,073	10	11.2	45
Michigan	158	19	2.16	42	1.49	38	2,212	18	14.0	6
Minnesota	112	22	3.25	26	2.10	27	1,457	23	13.0	14
Mississippi	222	14	11.28	4	6.77	4	2,796	14	12.6	20
Missouri	112	22	2.76	33	1.54	37	1,382	24	12.3	28
Montana	35	41	5.66	14	3.13	20	430	41	12.3	32
Nebraska	33	42	2.69	35	1.41	41	379	43	11.5	44
Nevada	29	44	2.76	34	2.02	29	397	42	13.7	7
New Hampshire	47	36	5.37	16	3.60	15	580	36	12.3	26
New Jersey	916	3	14.63	2	8.32	2	11,041	3	12.1	37
New Mexico	36	40	3.08	30	2.01	30	443	40	12.3	31
New York	347	9	2.40	38	1.38	43	4,277	9	12.3	29
North Carolina	223	13	4.11	23	2.76	22	2,980	13	13.4	10
North Dakota	12	48	2.47	37	1.61	36	187	47	15.6	2
Ohio	277	11	3.23	27	2.10	28	3,901	11	14.1	5
Oklahoma	51	34	2.06	46	1.29	45	683	32	13.4	9
Oregon	215	15	9.28	8	4.54	10	2,336	17	10.9	50
Pennsylvania	919	2	9.57	7	4.91	9	11,321	1	12.3	30
Rhode Island	46	38	5.64	15	2.96	21	552	38	12.0	38
South Carolina	141	20	5.03	21	3.29	18	1,723	20	12.2	34
South Dakota	3	51	0.56	51	0.30	51	37	51	12.2	36
Tennessee	86	27	2.18	41	1.40	42	1,135	26	13.2	12
Texas	715	4	5.37	17	3.81	14	8,918	4	12.5	22
Utah	28	45	2.27	40	1.47	39	298	45	10.6	51
Vermont	14	47	3.13	29	1.81	32	153	49	10.9	49
Virginia	384	7	7.60	10	5.33	8	4,751	7	12.4	25
Washington	446	6	11.24	5	6.43	5	4,905	6	11.0	48
West Virginia	203	16	14.16	3	7.42	3	2,505	15	12.3	27
Wisconsin	73	29	1.89	47	1.15	46	944	29	12.9	16
Wyoming	20	46	5.81	13	3.49	16	221	46	11.1	47

NOTE: Ranks are based on unrounded values. See appendices for source description, methods, and ICD codes.
SOURCE: National Center for Health Statistics multiple cause of death data. Population estimates from U.S. Bureau of the Census.

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Table 1-6. Asbestosis: Most frequently recorded occupations on death certificate, residents age 15 and over, selected states and years, 1987-1996

COC	Occupation	Number	Percent
585	Plumbers, pipefitters, and steamfitters	237	9.2
593	Insulation workers	124	4.8
019	Managers and administrators, n.e.c.	113	4.4
575	Electricians	106	4.1
567	Carpenters	97	3.8
889	Laborers, except construction	88	3.4
783	Welders and cutters	73	2.8
633	Supervisors, production occupations	72	2.8
453	Janitors and cleaners	67	2.6
637	Machinists	67	2.6
	All other occupations	1,441	56.0
	Occupation not reported	90	3.5
	TOTAL	**2,575**	**100.0**

COC - Census Occupation Code n.e.c. - not elsewhere classified
NOTE: Percentages may not total to 100% due to rounding. See appendices for source description, methods, ICD codes, industry and occupation codes, and list of selected states (and years) for which usual industry and occupation have been reported.
SOURCE: National Center for Health Statistics multiple cause of death data.

Table 1-7. Asbestosis: Most frequently recorded industries on death certificate, residents age 15 and over, selected states and years, 1987-1996

CIC	Industry	Number	Percent
060	Construction	638	24.8
360	Ship and boat building and repairing	195	7.6
192	Industrial and miscellaneous chemicals	105	4.1
400	Railroads	81	3.1
262	Miscellaneous nonmetallic mineral and stone products	67	2.6
392	Not specified manufacturing industries	66	2.6
901	General government, n.e.c.	51	2.0
460	Electric light and power	45	1.7
270	Blast furnaces, steelworks, rolling and finishing mills	44	1.7
961	Non-paid worker or non-worker	43	1.7
	All other industries	1,145	44.5
	Industry not reported	95	3.7
	TOTAL	**2,575**	**100.0**

CIC - Census Industry Code n.e.c. - not elsewhere classified
NOTE: Percentages may not total to 100% due to rounding. See appendices for source description, methods, ICD codes, industry and occupation codes, and list of selected states (and years) for which usual industry and occupation have been reported.
SOURCE: National Center for Health Statistics multiple cause of death data.

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Table 1-8 (page 1 of 2). Asbestosis: Proportionate mortality ratio (PMR) by usual occupation, residents age 15 and over, selected states and years, 1987-1996

COC	Occupation	Number of deaths	PMR	95% confidence interval	
				LCL	UCL
593	Insulation workers	124	192.27	160.23	229.99
643	Boilermakers	61	44.69	34.11	57.52
585	Plumbers, pipefitters, and steamfitters	237	19.98	17.37	22.94
646	Lay-out workers	8	18.20	7.84	35.83
653	Sheet metal workers	55	13.54	10.03	17.86
058	Marine and naval architects	5	12.26	3.97	28.64
584	Plasterers	9	11.20	5.14	21.25
534	Heating, air conditioning, and refrigeration mechanics	17	9.86	5.73	15.78
575	Electricians	106	7.60	6.18	9.25
829	Sailors and deckhands	10	6.90	3.32	12.68
544	Millwrights	25	6.67	4.30	9.84
757	Separating, filtering, and clarifying machine operators	13	6.02	3.20	10.29
783	Welders and cutters	73	5.96	4.66	7.53
224	Chemical technicians	5	5.68	1.84	13.27
759	Painting and paint spraying machine operators	13	5.42	2.88	9.26
555	Supervisors, electricians and power transmission installers	6	5.38	1.97	11.72
547	Specified mechanics and repairers, n.e.c.	21	5.37	3.31	8.21
518	Industrial machinery repairers	27	3.90	2.57	5.68
849	Crane and tower operators	14	3.80	2.08	6.38
876	Stevedores	5	3.66	1.18	8.55
507	Bus, truck, and stationary engine mechanic	14	3.64	1.99	6.11
696	Stationary engineers	23	3.52	2.23	5.29
056	Industrial engineers	9	3.25	1.49	6.17
057	Mechanical engineers	15	3.18	1.78	5.25
756	Mixing and blending machine operators	7	3.15	1.27	6.49
563	Brickmasons and stonemasons	21	3.10	1.91	4.74
567	Carpenters	97	3.01	2.43	3.70
549	Not specified mechanics and repairers	17	2.86	1.66	4.58
856	Industrial truck and tractor equipment operators	13	2.82	1.50	4.82
766	Furnace, kiln, and oven operators, except food	10	2.75	1.32	5.06
516	Heavy equipment mechanics	9	2.70	1.24	5.12
503	Supervisors, mechanics and repairers	12	2.63	1.36	4.59
558	Supervisors, construction, n.e.c.	35	2.63	1.83	3.66
637	Machinists	67	2.60	1.98	3.35
777	Miscellaneous machine operators, n.e.c.	41	2.55	1.82	3.47

See footnotes at end of table.

Table 1-8 (page 2 of 2). Asbestosis: Proportionate mortality ratio (PMR) by usual occupation, residents age 15 and over, selected states and years, 1987-1996

COC	Occupation	Number of deaths	PMR	95% confidence interval LCL	UCL
779	Machine operators, not specified	52	2.47	1.83	3.26
579	Painters, construction and maintenance	26	2.37	1.55	3.48
633	Supervisors, production occupations	72	2.31	1.80	2.92
365	Stock and inventory clerks	13	2.15	1.14	3.68
869	Construction laborers	48	1.83	1.34	2.45
453	Janitors and cleaners	67	1.52	1.16	1.96

COC - Census Occupation Code n.e.c. - not elsewhere classified LCL - lower confidence limit UCL - upper confidence limit
NOTE: See appendices for source description, methods, ICD codes, industry and occupation codes, and list of selected states (and years) for which usual industry and occupation have been reported.
SOURCE: National Center for Health Statistics multiple cause of death data.

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Table 1-9. Asbestosis: Proportionate mortality ratio (PMR) by usual industry, residents age 15 and over, selected states and years, 1987-1996

CIC	Industry	Number of deaths	PMR	95% confidence interval	
				LCL	UCL
360	Ship and boat building and repairing	195	33.95	29.27	39.29
262	Miscellaneous nonmetallic mineral and stone products	67	24.97	19.06	32.14
502	Lumber and construction materials	18	11.33	6.70	17.90
192	Industrial and miscellaneous chemicals	105	8.32	6.76	10.12
200	Petroleum refining	32	5.85	3.95	8.36
211	Other rubber products, and plastics footwear and belting	34	5.48	3.70	7.83
282	Fabricated structural metal products	35	5.26	3.65	7.32
272	Primary aluminum industries	18	5.11	3.02	8.07
462	Electric and gas, and other combinations	12	4.98	2.57	8.69
420	Water transportation	25	4.51	2.91	6.65
180	Plastics, synthetics, and resins	13	4.48	2.38	7.66
521	Hardware, plumbing and heating supplies	11	4.31	2.15	7.71
060	Construction	638	4.21	3.90	4.56
460	Electric light and power	45	4.08	2.98	5.46
210	Tires and inner tubes	15	3.66	2.04	6.04
881	Membership organizations	14	3.13	1.71	5.25
181	Drugs	11	3.05	1.52	5.46
472	Not specified utilities	7	3.03	1.22	6.25
250	Glass and glass products	21	2.95	1.82	4.51
400	Railroads	81	2.79	2.21	3.47
050	Nonmetallic mining and quarrying, except fuel	7	2.62	1.05	5.40
212	Miscellaneous plastics products	7	2.60	1.04	5.36
350	Not specified electrical machinery, equipment, and supplies	12	2.10	1.08	3.66
580	Lumber and building material retailing	13	2.06	1.10	3.52
160	Pulp, paper, and paperboard mills	23	1.97	1.25	2.96
270	Blast furnaces, steelworks, rolling and finishing mills	44	1.61	1.15	2.19
392	Not specified manufacturing industries	66	1.60	1.22	2.06

CIC - Census Industry Code n.e.c. - not elsewhere classified LCL - lower confidence limit UCL - upper confidence limit

NOTE: See appendices for source description, methods, ICD codes, industry and occupation codes, and list of selected states (and years) for which usual industry and occupation have been reported.

SOURCE: National Center for Health Statistics multiple cause of death data.

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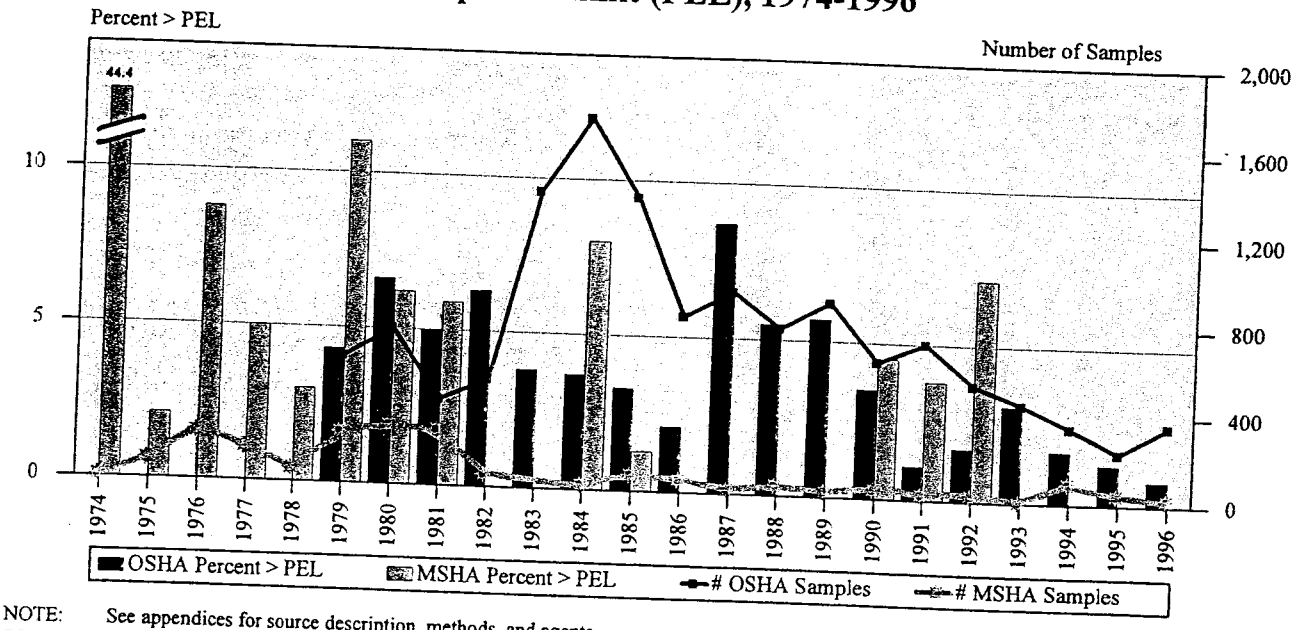
Table 1-10. Asbestosis: Estimated number of discharges from short-stay nonfederal hospitals, 1970-1996

Year	Number of discharges
1970	300
1971	400
1972	100
1973	2,000
1974	1,000
1975	1,000
1976	1,000
1977	1,000
1978	3,000
1979	3,000
1980	4,000
1981	-
1982	2,000
1983	4,000
1984	6,000
1985	6,000
1986	6,000
1987	11,000
1988	8,000
1989	8,000
1990	-
1991	7,000
1992	11,000
1993	8,000
1994	10,000
1995	9,000
1996	13,000

- no estimates are available for 1981 and 1990.
NOTE: Number of discharges has been rounded. NCHS recommends that in statistical comparisons, estimates of less than 5,000 not be used and that estimates of 5,000 to 10,000 be used with caution. See appendices for source description and methods.
SOURCE: National Center for Health Statistics National Hospital Discharge Survey.

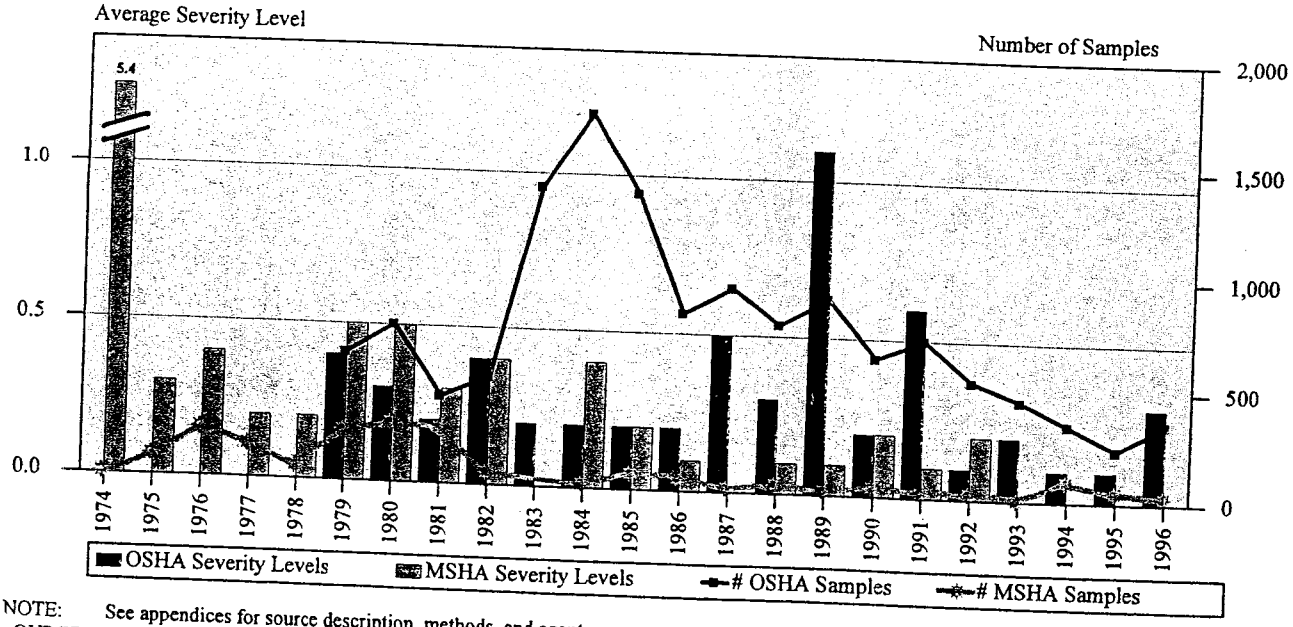
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Figure 1-3. Asbestos: Number of MSHA and OSHA inspector samples and percent exceeding the permissible exposure limit (PEL), 1974-1996



NOTE: See appendices for source description, methods, and agents.
SOURCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data. Occupational Safety and Health Administration: Integrated Management Information System.

Figure 1-4. Asbestos: Number of MSHA and OSHA inspector samples and average severity levels, 1974-1996



NOTE: See appendices for source description, methods, and agents.
OURCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data. Occupational Safety and Health Administration: Integrated Management Information System.

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Table 1-11. Asbestos: Number and percent of MSHA and OSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity level, by industry, 1987-1996

CIC	Industries most frequently recorded on death certificates with asbestosis, 1987-1996	Number of samples	% of total samples	% > PEL	Average severity
060	Construction	1,613	26.0	6.8	0.47
360	Ship and boat building and repairing	29	0.5	0.0	0.06
192	Industrial and miscellaneous chemicals	30	0.5	0.0	0.10
400	Railroads	17	0.3	0.0	0.01
262	Miscellaneous nonmetallic mineral and stone products	212	3.4	31.6	1.81
392	Not specified manufacturing industries	0	0.0	-	-
901	General government, n.e.c.	138	2.2	0.0	0.02
460	Electric light and power	70	1.1	2.9	0.29
270	Blast furnaces, steelworks, rolling and finishing mills	44	0.7	0.0	0.02
961	Non-paid worker or non-worker	0	0.0	-	-
	All other industries	4,027	64.9	1.6	0.33
	Industry not reported	23	0.4	0.0	0.03
	TOTAL	**6,203**	**100.0**	**3.9**	**0.40**

CIC - Census Industry Code n.e.c. - not elsewhere classified - indicates incalculable field

NOTE: Percentage of total samples may not sum to 100% due to rounding. See appendices for source description, methods, ICD codes, industry codes, agents, and list of selected states (and years) for which usual industry has been reported.

SOURCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data. Occupational Safety and Health Administration: Integrated Management Information System. National Center for Health Statistics: multiple cause of death data.

Table 1-12. Asbestos: Number and percent of MSHA and OSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity level, by industry, 1987-1996

CIC	Industries most frequently sampled, 1987-1996	Number of samples	% of total samples	% > PEL	Average severity
060	Construction	1,613	26.0	6.8	0.47
351	Motor vehicles and motor vehicle equipment	281	4.5	10.3	2.13
910	Justice, public order, and safety	213	3.4	0.0	0.02
262	Miscellaneous nonmetallic mineral and stone products	212	3.4	31.6	1.81
040	Metal mining	201	3.2	0.0	0.00
050	Nonmetallic mining and quarrying, except fuel	165	2.7	3.0	0.12
831	Hospitals	155	2.5	0.0	0.02
842	Elementary and secondary schools	145	2.3	0.0	0.06
901	General government, n.e.c.	138	2.2	0.0	0.02
751	Automotive repair and related services	137	2.2	0.0	0.01
	All other industries	2,920	47.1	1.1	0.24
	Industry not reported	23	0.4	0.0	0.03
	TOTAL	**6,203**	**100.0**	**3.9**	**0.40**

CIC - Census Industry Code. n.e.c. - not elsewhere classified

NOTE: Percentage of total samples may not sum to 100% due to rounding. See appendices for source description, methods, ICD codes, industry codes, and agents.

SOURCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data. Occupational Safety and Health Administration: Integrated Management Information System.

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Table 1-13. Asbestos: Number and percent of MSHA and OSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity level, by industry, 1995-1996

CIC	Industries most frequently recorded on death certificates with asbestosis, 1995-1996	Number of samples	% of total samples	% > PEL	Average severity
060	Construction	126	18.7	1.6	0.13
192	Industrial and miscellaneous chemicals	6	0.9	0.0	0.00
360	Ship and boat building and repairing	5	0.7	0.0	0.00
400	Railroads	0	0.0	-	-
270	Blast furnaces, steelworks, rolling and finishing mills	6	0.9	0.0	0.00
392	Not specified manufacturing industries	0	0.0	-	-
842	Elementary and secondary schools	33	4.9	0.0	0.02
460	Electric light and power	5	0.7	0.0	0.00
262	Miscellaneous nonmetallic mineral and stone products	16	2.4	12.5	0.22
901	General government, n.e.c.	7	1.0	0.0	0.09
942	Military	0	0.0	-	-
961	Non-paid worker or non-worker	0	0.0	-	-
	All other industries	469	69.7	0.4	0.26
	Industry not reported	0	0.0	-	-
	TOTAL	**673**	**100.0**	**0.9**	**0.21**

CIC - Census Industry Code n.e.c. - not elsewhere classified - indicates incalculable field

NOTE: Percentage of total samples may not sum to 100% due to rounding. See appendices for source description, methods, ICD codes, industry codes, agents, and list of selected states (and years) for which usual industry has been reported.

URCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data. Occupational Safety and Health Administration: Integrated Management Information System. National Center for Health Statistics: multiple cause of death data.

Table 1-14. Asbestos: Number and percent of MSHA and OSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity level, by industry, 1995-1996

CIC	Industries most frequently sampled, 1995-1996	Number of samples	% of total samples	% > PEL	Average severity
060	Construction	126	18.7	1.6	0.13
142	Yarn, thread, and fabric mills	53	7.9	0.0	0.03
040	Metal mining	42	6.2	0.0	0.00
140	Dyeing and finishing textiles, except wool and knit goods	41	6.1	0.0	0.02
050	Nonmetallic mining and quarrying, except fuel	36	5.3	0.0	0.01
842	Elementary and secondary schools	33	4.9	0.0	0.02
910	Justice, public order, and safety	32	4.8	0.0	0.03
712	Real estate, including real estate-insurance offices	20	3.0	0.0	0.00
351	Motor vehicles and motor vehicle equipment	19	2.8	5.3	0.14
262	Miscellaneous nonmetallic mineral and stone products	16	2.4	12.5	0.22
	All other industries	255	37.9	0.4	0.46
	TOTAL	**673**	**100.0**	**0.9**	**0.21**

CIC - Census Industry Code.

NOTE: Percentage of total samples may not sum to 100% due to rounding. See appendices for source description, methods, ICD codes, industry codes, and agents.

RCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data. Occupational Safety and Health Administration: Integrated Management Information System.

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Table 1-15 (page 1 of 2). Asbestos: Number of MSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity levels, by state, 1977-1996

State	1977-1986				1987-1996				1995-1996			
	Total samples		Samples > PEL		Total samples		Samples > PEL		Total samples		Samples > PEL	
	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.
Alabama	0	-	-	-	1	0.01	0.0	-	0	-	-	-
Alaska	0	-	-	-	0	-	-	-	0	-	-	-
Arizona	68	0.52	14.7	1.38	0	-	-	-	0	-	-	-
Arkansas	0	-	-	-	0	-	-	-	0	-	-	-
California	122	0.72	19.7	2.33	41	0.14	0.0	-	10	0.03	0.0	-
Colorado	36	0.12	0.0	-	6	0.00	0.0	-	0	-	-	-
Connecticut	0	-	-	-	0	-	-	-	0	-	-	-
Delaware	0	-	-	-	0	-	-	-	0	-	-	-
District of Columbia	0	-	-	-	0	-	-	-	0	-	-	-
Florida	4	0.03	0.0	-	0	-	-	-	0	-	-	-
Georgia	6	3.63	66.7	5.45	5	0.00	0.0	-	3	0.00	0.0	-
Hawaii	0	-	-	-	1	0.00	0.0	-	0	-	-	-
Idaho	3	0.01	0.0	-	2	0.00	0.0	-	0	-	-	-
Illinois	55	0.05	0.0	-	2	0.00	0.0	-	0	-	-	-
Indiana	1	0.01	0.0	-	0	-	-	-	0	-	-	-
Iowa	0	-	-	-	0	-	-	-	0	-	-	-
Kansas	0	-	-	-	0	-	-	-	0	-	-	-
Kentucky	0	-	-	-	0	-	-	-	0	-	-	-
Louisiana	4	0.00	0.0	-	36	0.00	0.0	-	1	0.00	0.0	-
Maine	0	-	-	-	0	-	-	-	0	-	-	-
Maryland	33	0.17	0.0	-	14	0.00	0.0	-	1	0.00	0.0	-
Massachusetts	0	-	-	-	1	0.00	0.0	-	0	-	-	-
Michigan	2	0.00	0.0	-	95	0.00	0.0	-	21	0.00	0.0	-
Minnesota	162	0.09	0.6	1.20	42	0.01	0.0	-	14	0.00	0.0	-
Mississippi	0	-	-	-	0	-	-	-	0	-	-	-
Missouri	3	0.00	0.0	-	1	0.00	0.0	-	0	-	-	-
Montana	120	0.30	4.2	1.42	12	0.07	0.0	-	0	-	-	-

See footnotes at end of table.

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Table 1-15 (page 2 of 2). Asbestos: Number of MSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity levels, by state, 1977-1996

State	1977-1986				1987-1996				1995-1996			
	Total samples		Samples > PEL		Total samples		Samples > PEL		Total samples		Samples > PEL	
	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.
Nebraska	0	-	-	-	0	-	-	-	0	-	-	-
Nevada	0	-	-	-	4	0.00	0.0	-	0	-	-	-
New Hampshire	0	-	-	-	0	-	-	-	0	-	-	-
New Jersey	14	0.13	0.0	-	0	-	-	-	0	-	-	-
New Mexico	99	0.19	2.0	3.30	2	0.00	0.0	-	1	0.00	0.0	-
New York	33	0.34	0.0	-	5	0.00	0.0	-	0	-	-	-
North Carolina	3	0.00	0.0	-	0	-	-	-	0	-	-	-
North Dakota	0	-	-	-	0	-	-	-	0	-	-	-
Ohio	1	0.00	0.0	-	0	-	-	-	0	-	-	-
Oklahoma	21	0.17	0.0	-	0	-	-	-	0	-	-	-
Oregon	0	-	-	-	0	-	-	-	0	-	-	-
Pennsylvania	7	0.12	0.0	-	15	0.00	0.0	-	5	0.00	0.0	-
Rhode Island	0	-	-	-	0	-	-	-	0	-	-	-
South Carolina	55	0.05	0.0	-	12	0.00	0.0	-	2	0.00	0.0	-
South Dakota	52	0.18	0.0	-	13	0.02	0.0	-	0	-	-	-
Tennessee	0	-	-	-	0	-	-	-	0	-	-	-
Texas	72	1.12	1.4	75.63	19	0.00	0.0	-	17	0.00	0.0	-
Utah	1	0.01	0.0	-	1	0.00	0.0	-	0	-	-	-
Vermont	183	0.55	13.1	1.81	22	0.63	22.7	2.12	0	-	-	-
Virginia	12	0.15	0.0	-	8	0.00	0.0	-	0	-	-	-
Washington	11	0.00	0.0	-	1	0.00	0.0	-	1	0.00	0.0	-
West Virginia	0	-	-	-	2	0.00	0.0	-	0	-	-	-
Wisconsin	21	0.15	0.0	-	3	0.00	0.0	-	2	0.00	0.0	-
Wyoming	7	0.00	0.0	-	0	-	-	-	0	-	-	-
TOTAL	**1,211**	**0.37**	**5.9**	**3.18**	**366**	**0.06**	**1.4**	**2.12**	**78**	**0.00**	**0.0**	**-**

Avg. Sev. - Average Severity - indicates incalculable field.
NOTE: See appendices for source description, methods, and agents.
SOURCE: Mine Safety and Health Administration: metal/nonmetal mine inspection data.

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Table 1-16 (page 1 of 2). Asbestos: Number of OSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity levels, by state, 1982-1996

State	1982-1986				1987-1996				1995-1996			
	Total samples		Samples > PEL		Total samples		Samples > PEL		Total samples		Samples > PEL	
	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.
Alabama	80	0.18	5.0	2.27	53	0.00	0.0	-	3	0.00	0.0	-
Alaska	139	0.08	1.4	4.95	47	0.12	2.1	3.65	0	-	-	-
Arizona	31	0.02	0.0	-	39	0.12	2.6	1.90	0	-	-	-
Arkansas	85	1.19	4.7	24.75	176	0.23	6.8	1.91	10	0.00	0.0	-
California	12	0.03	0.0	-	177	0.49	5.6	7.13	22	0.06	0.0	-
Colorado	236	0.07	0.8	3.57	76	0.22	5.3	3.23	10	0.00	0.0	-
Connecticut	211	0.11	1.4	3.25	151	0.04	0.0	-	18	0.00	0.0	-
Delaware	7	0.10	0.0	-	2	0.00	0.0	-	0	-	-	-
District of Columbia	49	0.10	2.0	2.04	10	0.06	0.0	-	0	-	-	-
Florida	69	2.05	8.7	23.09	156	0.15	2.6	4.73	9	0.00	0.0	-
Georgia	163	0.47	12.9	3.25	114	0.12	3.5	1.91	7	0.00	0.0	-
Hawaii	14	0.01	0.0	-	11	0.00	0.0	-	2	0.00	0.0	-
Idaho	26	0.03	0.0	-	68	0.02	0.0	-	2	0.00	0.0	-
Illinois	235	0.06	1.7	1.58	345	0.02	0.0	-	15	0.00	0.0	-
Indiana	163	0.12	2.5	1.85	157	0.01	0.0	-	32	0.00	0.0	-
Iowa	187	0.11	2.1	3.51	97	0.02	0.0	-	1	0.00	0.0	-
Kansas	35	0.24	11.4	1.74	23	0.04	0.0	-	0	-	-	-
Kentucky	117	0.04	0.9	1.94	125	0.08	0.0	-	32	0.03	0.0	-
Louisiana	64	0.10	3.1	1.91	54	0.06	1.9	1.02	0	-	-	-
Maine	68	0.06	0.0	-	8	0.00	0.0	-	0	-	-	-
Maryland	40	0.02	0.0	-	42	0.39	11.9	2.64	17	0.05	0.0	-
Massachusetts	322	0.42	12.1	2.15	148	0.32	9.5	2.97	20	0.11	5.0	1.30
Michigan	14	0.00	0.0	-	357	0.10	2.2	3.18	29	0.11	3.4	1.90
Minnesota	8	0.31	25.0	1.15	23	0.00	0.0	-	0	-	-	-
Mississippi	17	0.26	5.9	1.05	103	0.01	0.0	-	14	0.00	0.0	-
Missouri	371	0.14	0.8	16.02	110	0.05	1.8	1.66	2	0.00	0.0	-
Montana	148	0.11	2.0	1.40	25	0.04	0.0	-	2	0.00	0.0	-

See footnotes at end of table.

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Table 1-16 (page 2 of 2). Asbestos: Number of OSHA inspector samples, percent exceeding the permissible exposure limit (PEL) and average severity levels, by state, 1982-1996

State	1982-1986				1987-1996				1995-1996			
	Total samples		Samples > PEL		Total samples		Samples > PEL		Total samples		Samples > PEL	
	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.	Number	Avg. Sev.	%	Avg. Sev.
Nebraska	69	0.01	0.0	-	74	0.01	0.0	-	2	0.00	0.0	-
Nevada	32	0.04	0.0	-	38	0.37	7.9	3.90	4	0.18	0.0	-
New Hampshire	103	0.30	4.9	4.24	47	0.04	2.1	1.50	4	0.00	0.0	-
New Jersey	301	0.15	2.7	2.77	193	1.25	21.2	5.49	2	0.00	0.0	-
New Mexico	0	-	-	-	22	0.02	0.0	-	0	-	-	-
New York	404	0.07	2.0	1.37	856	0.37	1.8	18.60	74	1.53	1.4	110.00
North Carolina	97	0.23	4.1	2.09	337	0.15	3.0	3.34	116	0.02	0.0	-
North Dakota	2	0.00	0.0	-	3	0.01	0.0	-	3	0.01	0.0	-
Ohio	282	0.15	2.8	3.97	443	1.00	5.6	16.86	28	0.01	0.0	-
Oklahoma	86	0.07	3.5	1.40	51	0.13	3.9	2.48	2	0.00	0.0	-
Oregon	128	0.10	3.1	1.37	32	0.47	3.1	10.50	6	1.75	16.7	10.50
Pennsylvania	496	0.38	5.0	5.49	206	0.76	7.8	9.21	13	0.02	0.0	-
Rhode Island	89	0.25	9.0	2.30	12	4.32	58.3	7.39	0	-	-	-
South Carolina	33	0.07	0.0	-	46	0.29	8.7	2.70	11	0.13	0.0	-
South Dakota	2	0.00	0.0	-	30	0.00	0.0	-	1	0.00	0.0	-
Tennessee	30	0.02	0.0	-	125	4.11	2.4	167.46	32	0.15	6.3	1.20
Texas	305	0.05	1.3	1.20	317	0.38	5.7	5.90	26	0.00	0.0	-
Utah	2	0.02	0.0	-	4	0.00	0.0	-	1	0.00	0.0	-
Vermont	0	-	-	-	1	0.00	0.0	-	0	-	-	-
Virginia	127	0.18	3.9	1.23	69	0.83	24.6	2.71	0	-	-	-
Washington	4	0.21	0.0	-	82	0.03	0.0	-	13	0.00	0.0	-
West Virginia	55	0.32	3.6	5.80	15	2.33	40.0	5.81	0	-	-	-
Wisconsin	152	0.22	9.2	1.70	136	0.77	2.9	24.50	9	0.00	0.0	-
Wyoming	15	0.00	0.0	-	1	0.00	0.0	-	1	0.00	0.0	-
TOTAL	**5,725**	**0.21**	**3.6**	**3.99**	**5,837**	**0.42**	**4.1**	**9.24**	**595**	**0.24**	**1.0**	**21.02**

Avg. Sev. - Average Severity - indicates incalculable field.
NOTE: See appendices for source description, methods, and agents.
SOURCE: Occupational Safety and Health Administration: Integrated Management Information System.

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