WORK RELATED LUNG DISEASE SURVEILLANCE REPORT

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Institute for Occupational Safety and Health

CDC
CENTERS FOR DISEASE CONTROL

WORK-RELATED LUNG DISEASE SURVEILLANCE REPORT

Division of Respiratory Disease Studies

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Preface

The Work-Related Lung Disease Surveillance Report was compiled by the Division of Respiratory Disease Studies, National Institute for Occupational Safety and Health. This report represents a summary of surveillance data for various occupational respiratory diseases. Some data originated from programs administered by the Division, e.g., information provided by the Coal Workers' X-ray Surveillance Program and the National Coal Workers' Autopsy Study. Other data were obtained from publications, reports, and data tapes provided by the National Center for Health Statistics, the Bureau of Labor Statistics, the Mine Safety and Health Administration, the Occupational Safety and Health Administration, the Health Care Financing Administration, and the Social Security Administration.

This report has two major sections: Figures and Tables. Section I contains 21 figures and Section II contains 59 tables. Figures display data from tables containing information best presented in graphical form. A corresponding table is provided for each graph to enable determination of actual numbers. A more detailed listing of the individual tables by disease category can be found at the first part of the Tables section. The Appendix briefly describes each of the major sources of data used in the report and, in some cases, directs the reader to additional documentation.

This first edition of the Work-Related Lung Disease Surveillance Report is a response to numerous requests for information about the extent of lung disease caused by exposures in the workplace. Surveillance information, including that contained in this report, derives from various sources which differ in completeness of reporting, case definitions, and populations of interest. Nevertheless, surveillance information can be of use in establishing priorities for investigation and intervention, as well as in tracking progress toward the elimination of preventable disease.

Comments and suggestions from users of the report, as well as information about the uses to which it is being put, would be appreciated and will be used to increase the utility of future editions. Comments and suggestions may be sent to:

Work-Related Lung Disease Report
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Acknowledgements

This report was prepared by the Division of Respiratory Disease Studies, National Institute for Occupational Safety and Health, under the supervision of Gregory R. Wagner, Director. Additional supervision was provided by Robert M. Castellan, Chief, Epidemiological Investigations Branch, Division of Respiratory Disease Studies.

The detailed tables were prepared by Thomas B. Richards, Rochelle B. Althouse, Alwin L. Dieffenbach, and Kathleen B. Kinsley, with final editing by Barbara A. Bonnett and Karl Musgrave. Graphics were provided by Karl Musgrave. Text portions of the report were contributed by Rochelle B. Althouse, Karl Musgrave and Lori J. Houghton.

Thanks are also due to individuals from the Division of Surveillance, Hazard Evaluations, and Field Studies for assistance in the preparation of numerous tables. Final editing and review was provided by the Surveillance Interest Group, Division of Respiratory Disease Studies.

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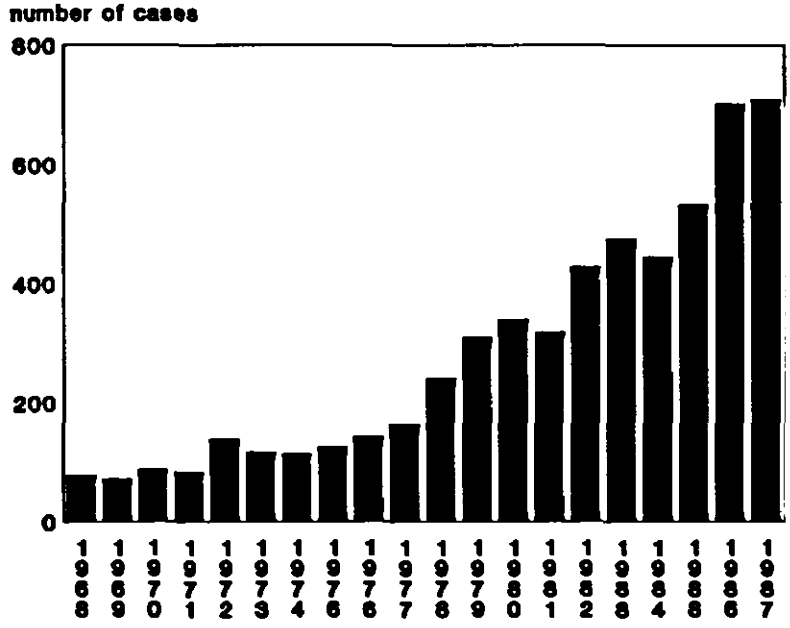
Asbestosis

Asbestosis includes ICD-8 code 515.2 (asbestosis) and ICD-9 code 501 (asbestosis).

See Appendix for more information about multiple cause of death data.

See Table 6 for data.

Figure 1. Multiple cause of death listings with any mention of asbestosis in United States residents age 15 and over, from 1968 to 1987



Malignant neoplasm of pleura includes ICD-8 code 163.0 (malignant neoplasm of parietal pleura) and ICD-9 codes 163.0 (malignant neoplasm of parietal pleural), 163.1 (malignant neoplasm of visceral pleura), and 163.9 (malignant neoplasm of pleura, unspecified).

See Appendix for more information about multiple cause of death data.

See Table 7 for data.

Figure 2. Multiple cause of death listings with any mention of malignant neoplasm of pleura in United States residents age 15 and over, from 1968 to 1987

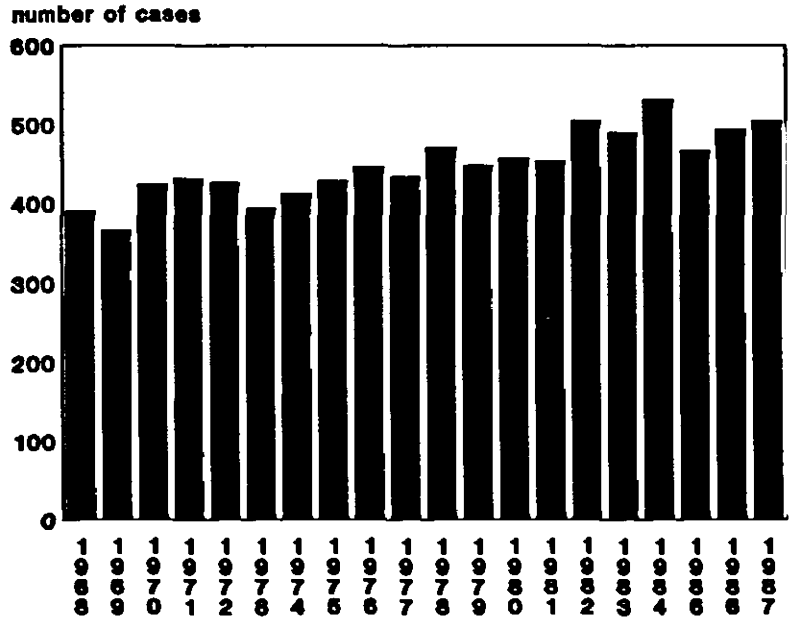
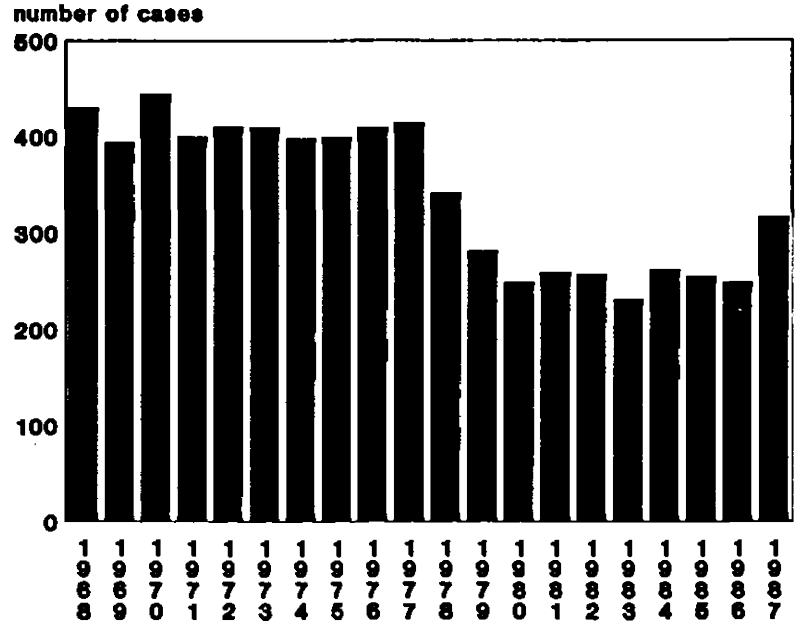


Figure 3. Multiple cause of death listings with any mention of malignant neoplasm of peritoneum in United States residents age 15 and over, from 1968 to 1987

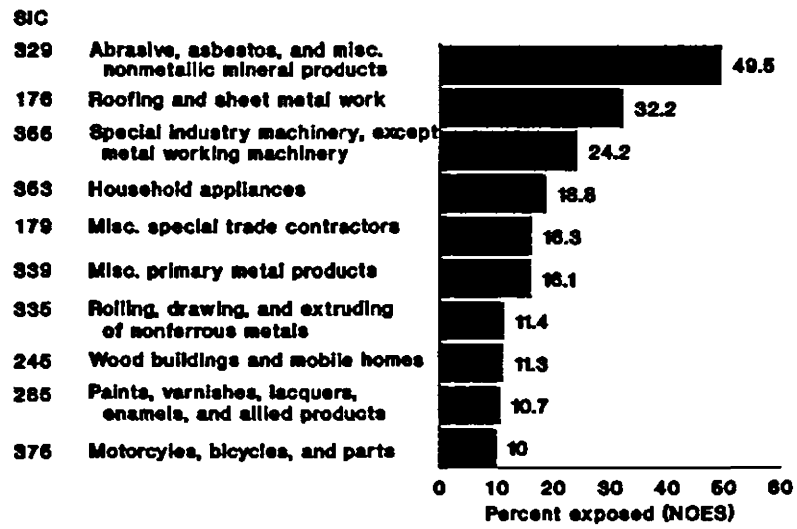


Malignant neoplasm of peritoneum includes ICD-8 code 158.9 (malignant neoplasm of peritoneum, excluding malignant neoplasm of retroperitoneal tissue) and ICD-9 codes 158.8 (malignant neoplasm, specified parts of peritoneum) and 158.9 (malignant neoplasm of peritoneum, unspecified).

See Appendix for more information about multiple cause of death data.

See Table 8 for data.

Figure 4. Non-mining industries with the highest proportions of workers potentially exposed to asbestos dust, 1986



Estimates of the proportions of workers potentially exposed to asbestos are based on data from the National Occupational Exposure Survey (NOES).

See Appendix for more information about NOES.

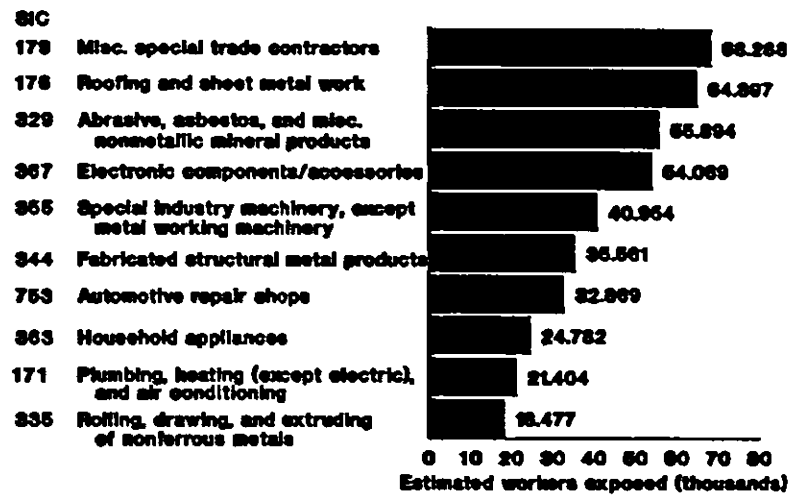
See Table 2 for data.

Estimates of the numbers of workers potentially exposed to asbestos are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES). SIC 13 (Oil and gas extraction) which was not calculated from NOES information, would have an estimated 40,824 workers exposed to asbestos based on an assumption that 10% of the oil and gas extraction work force is exposed to asbestosis.

See Appendix for more information about NOES and County Business Patterns.

See Table 3 for data.

Figure 5. Non-mining industries with the largest numbers of workers potentially exposed to asbestos dust, 1986



Coal Workers' Pneumoconiosis

Coal workers' pneumoconiosis includes ICD-8 code 515.1 (anthracosilicosis) and ICD-9 code 500 (coal workers' pneumoconiosis).

See Appendix for more information about multiple cause of death data.

See Table 19 for data.

Figure 6. Multiple cause of death listings with any mention of coal workers' pneumoconiosis in United States residents age 15 and over, from 1968 to 1987

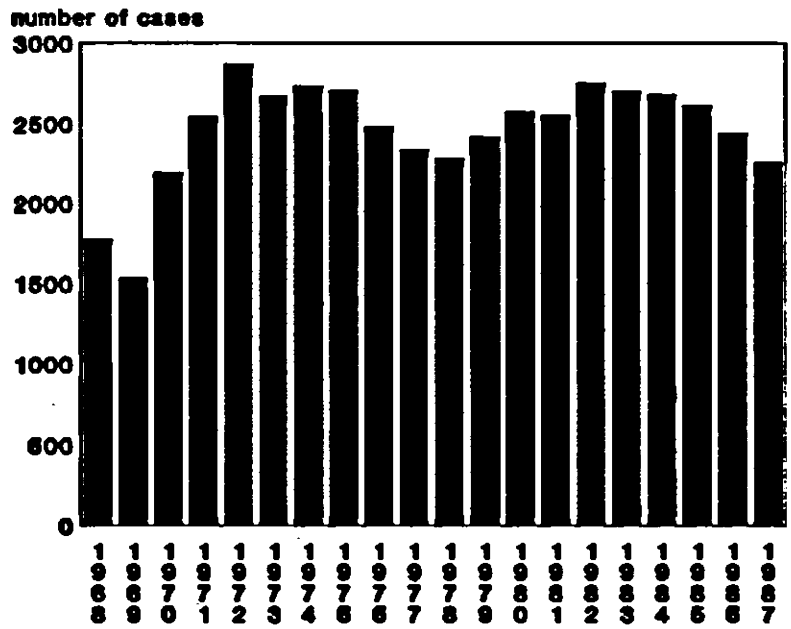
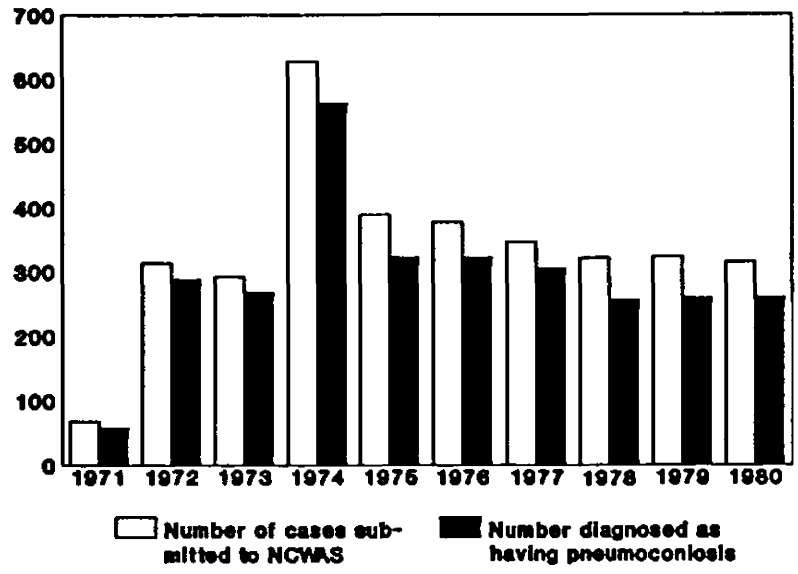


Figure 7. Number of cases submitted to the National Coal Workers' Autopsy Study (NCWAS), and the number diagnosed as having pneumoconiosis, from 1971 to 1980.

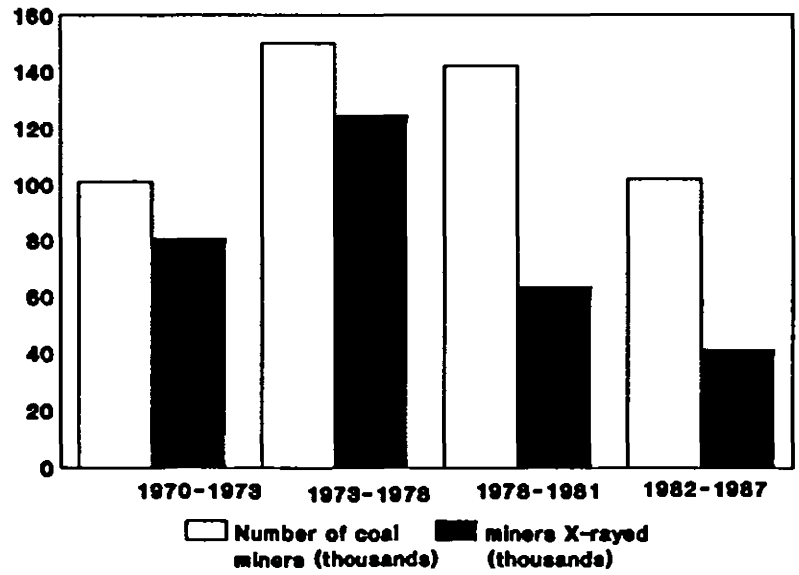


Pneumoconiosis includes ICD-8 code 515 (pneumoconiosis due to silica and silicates), which includes the following subcategories: silicosis (515.0); anthracosilicosis (515.1); asbestosis (515.2); and other, including pneumoconiosis, unspecified (515.9)

See Appendix for more information on the National Coal Workers' Autopsy Study.

See Table 18 for data.

Figure 8. Estimated number of underground coal miners and number of miners examined in the Coal Workers' X-ray Surveillance Program (CWXSP), from 1970 to 1987.

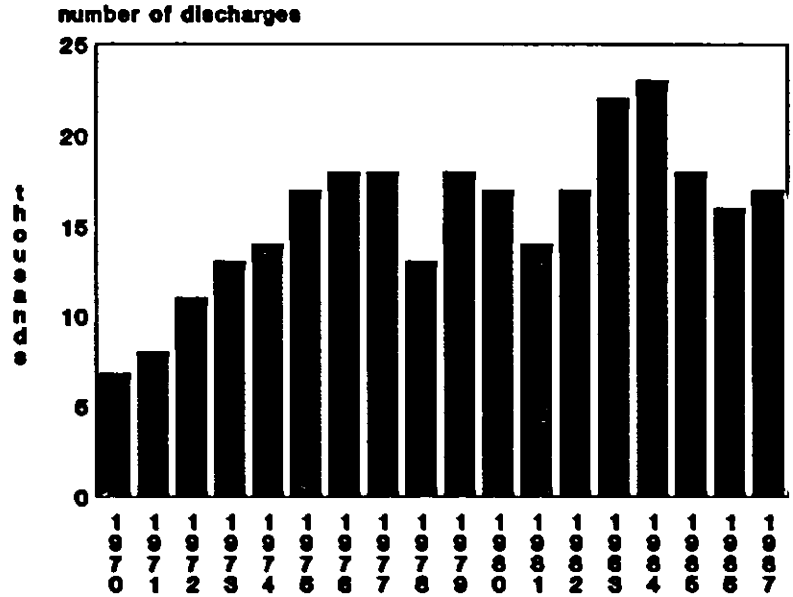


Estimates of the number of underground coal miners are based on MSHA informational reports.

See Appendix for more information about the Coal Workers' X-ray Surveillance Program and MSHA informational reports on coal mining.

See Table 21 for data.

Figure 9. Number of discharges with any mention of coal workers' pneumoconiosis from short-stay hospitals, from 1970 to 1987

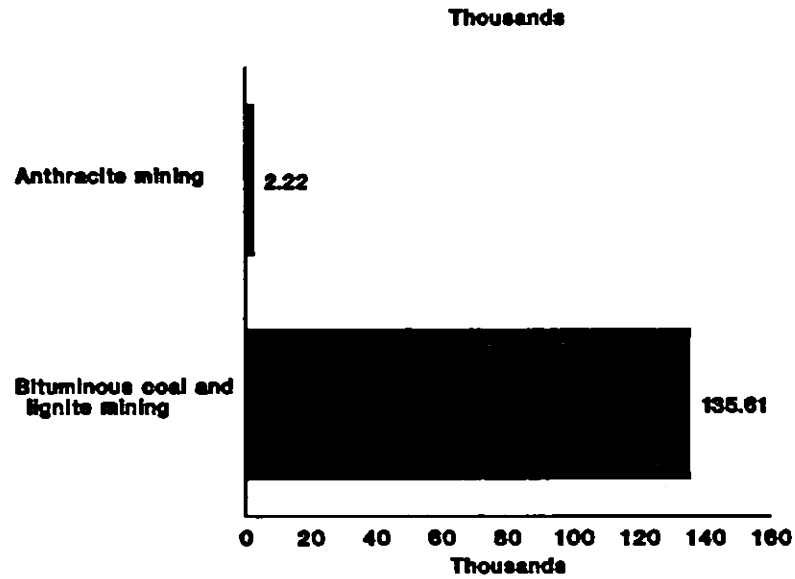


Number of discharges includes multiple discharges for individual patients.

See Appendix for more information about the National Center for Health Statistics National Hospital Discharge Survey.

See Table 14 for data.

Figure 10. Estimated numbers of workers potentially exposed to coal mine dust in anthracite and bituminous coal mining, 1989.



Estimates are based on information for 1989 assuming that 100% of non-office workers in these industries have potential exposure to coal mine dust.

See Appendix for more information on the MSHA informational reports on coal mining.

See Table 12 for data.

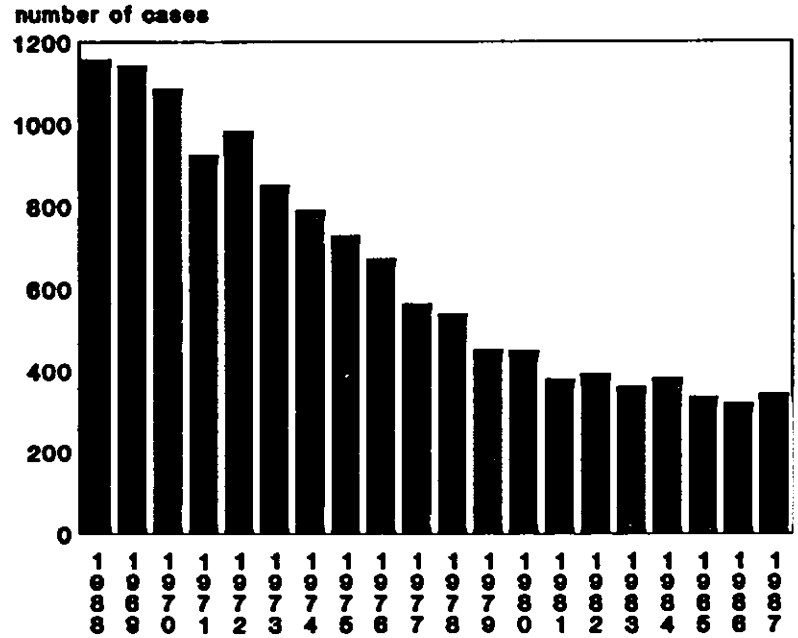
Silicosis

Silicosis includes ICD-8 codes 515.0 (silicosis) and 010 (silicotuberculosis), and ICD-9 code 502 (pneumoconiosis due to other silica or silicates).

See Appendix for more information about multiple cause of death data.

See Table 27 for data.

Figure 11. Multiple cause of death listings with any mention of silicosis in United States residents age 15 and over, from 1968 to 1987



Estimates of the proportions of workers potentially exposed to the hazards of flint, quartz, sand, or silica powder are based on data from the National Occupational Exposure Survey (NOES).

See Appendix for more information about NOES.

See Table 22 for data.

Figure 12. Non-mining industries with the highest proportions of workers potentially exposed to respirable crystalline silica dust, 1986

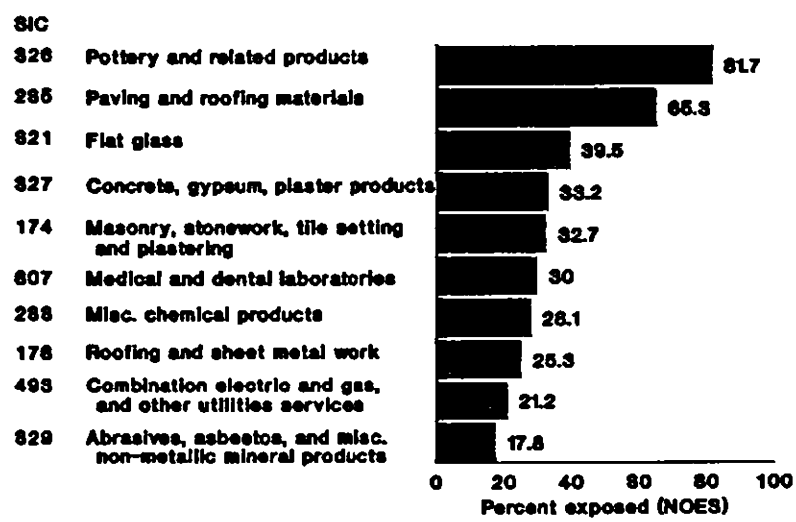


Figure 13. Non-mining industries with the largest numbers of workers potentially exposed to respirable crystalline silica dust, 1986

Estimates of the numbers of workers potentially exposed to the hazards of flint, quartz, sand, or silica powder are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES).

See Appendix for more information about NOES and County Business Patterns.

See Table 23 for data.

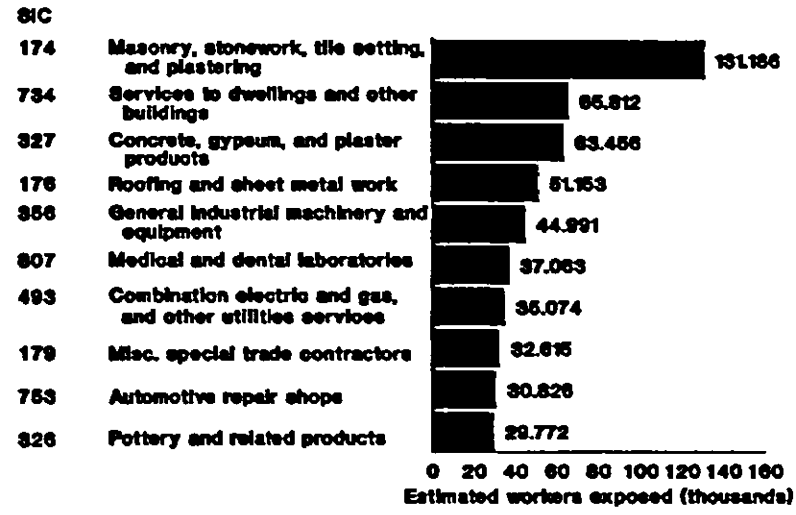
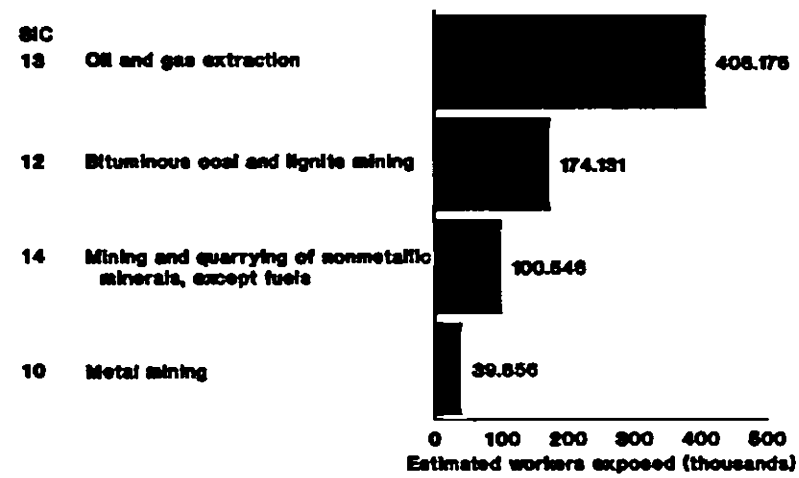


Figure 14. Mining industries with the largest numbers of workers potentially exposed to respirable crystalline silica dust, 1986

Estimates are based on data from the 1986 County Business Patterns assuming that 100% of workers in these industries have a potential exposure to respirable crystalline silica dust.

See Appendix for more information on the County Business Patterns.

See Table 23 Note for data.



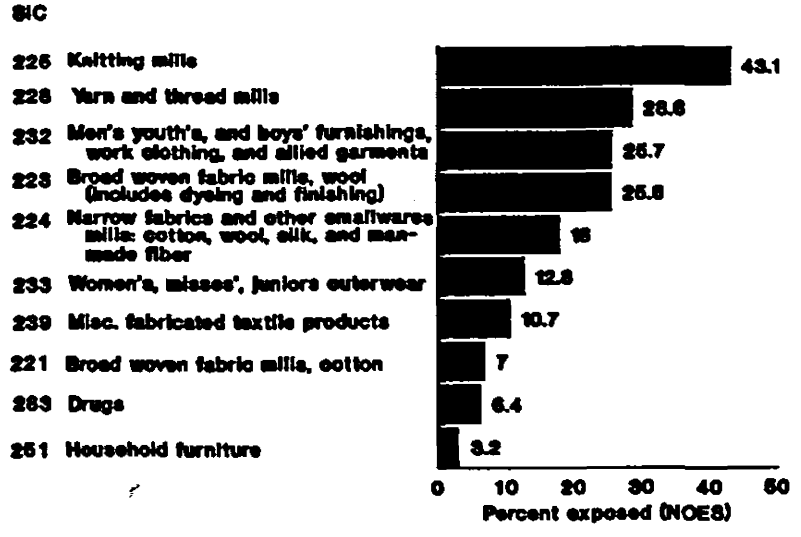
Exposure to Cotton Dust

Estimates of the proportions of workers potentially exposed to cotton dust are based on data from the National Occupational Survey (NOES).

See Appendix for more information about NOES.

See Table 29 for data.

Figure 15. Industries with the highest proportions of workers potentially exposed to cotton dust, 1986

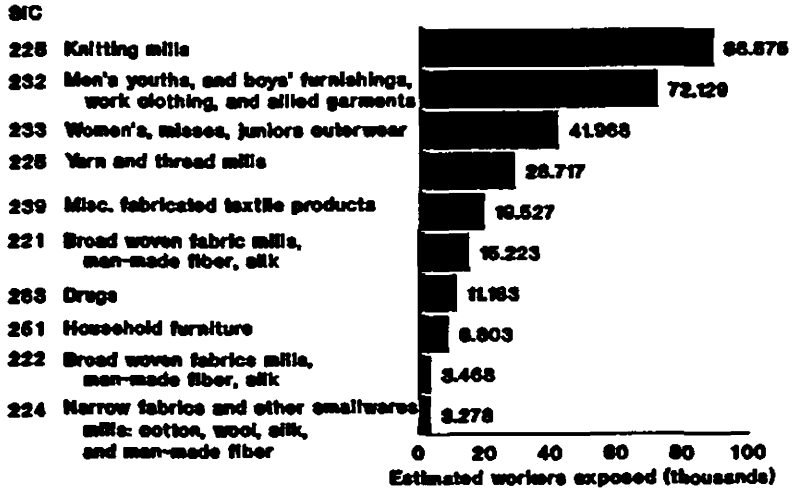


Estimates of the numbers of workers potentially exposed to cotton dust are based on data from the 1986 County Business Patterns and National Occupational Exposure Survey (NOES).

See Appendix for more information about NOES and County Business Patterns.

See Table 30 for data.

Figure 16. Industries with the largest numbers of workers potentially exposed to cotton dust, 1986



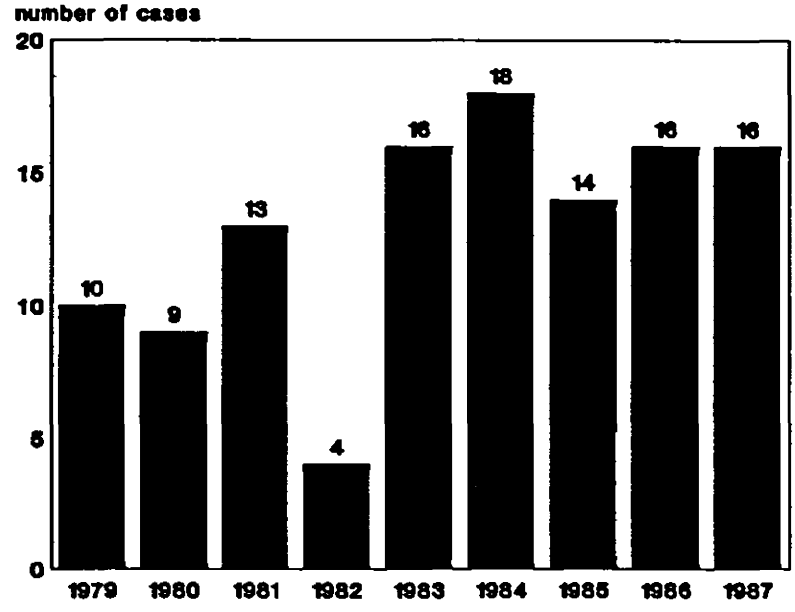
Pneumonopathy due to Inhalation of Other Dust

Pneumonopathy due to the inhalation of other dust includes ICD-9 code 504. Examples of conditions listed under this code include byssinosis and flax dressers' disease.

See Appendix for more information about multiple cause of death data.

See Table 33 for data.

Figure 17. Multiple cause of death listings with any mention of pneumonopathy due to inhalation of other dust (ICD-9 code 504) in United States residents age 15 and over, from 1979 to 1987



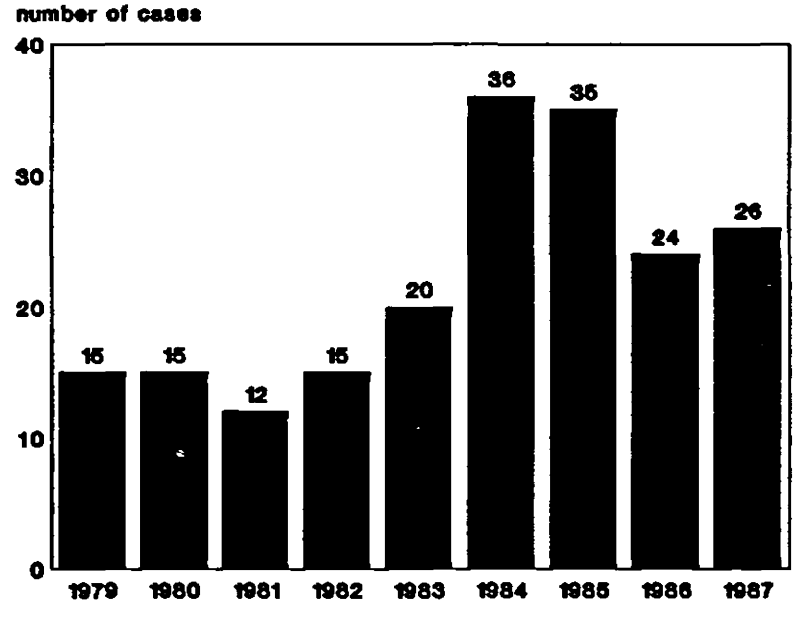
Hypersensitivity Pneumonitis

Hypersensitivity pneumonitis includes ICD-9 code 495 (extrinsic allergic alveolitis), which includes subcategories 495.0 through 495.9 (e.g., farmer's lung, bagassosis, bird-fanciers' lung, suberosis, malt workers' lung, mushroom workers' lung, maple bark-strippers lung and "ventilation" pneumonitis).

See Appendix for more information about multiple cause of death data.

See Table 37 for data.

Figure 18. Multiple cause of death listings with any mention of hypersensitivity pneumonitis in United States residents age 15 and over, from 1979 to 1987



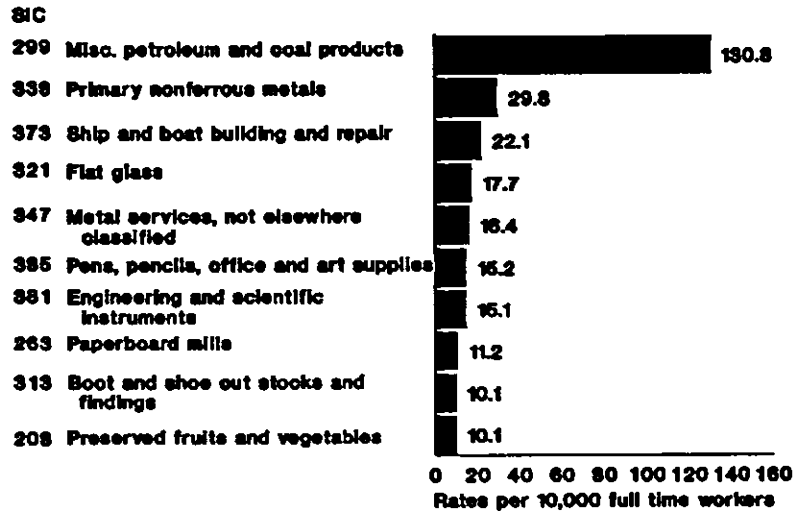
Toxic Agents

Industry tabulations are based on agriculture, mining, construction, and manufacturing industries.

See Appendix for more information on Bureau of Labor Statistics Annual Report of Occupational Injuries and Illnesses.

See Table 42 for data.

Figure 19. Industries with the highest incidence rates of reported occupational respiratory conditions due to toxic agents, private sector, 1988



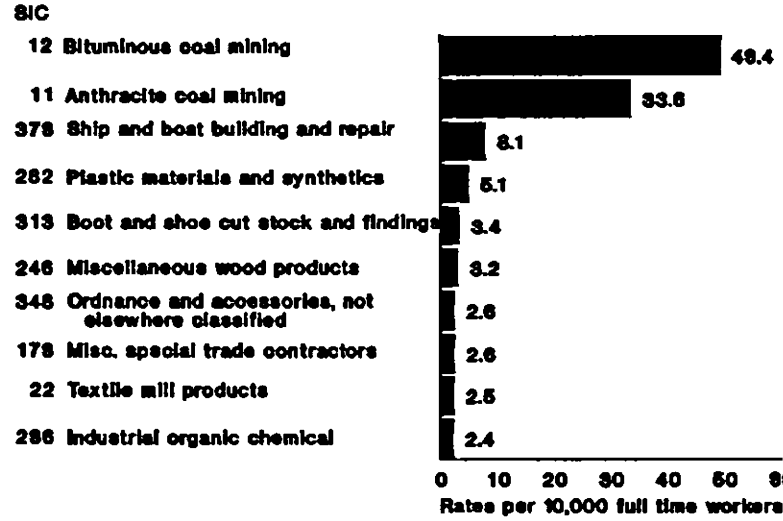
Dust Diseases of the Lungs

Industry tabulations are based on agriculture, mining, construction, and manufacturing industries.

See Appendix for more information about Bureau of Labor Statistics annual report of occupational injuries and illnesses.

See Table 52 for data.

Figure 20. Industries with the highest incidence rates of reported occupational dust diseases of the lungs, private sector, 1988



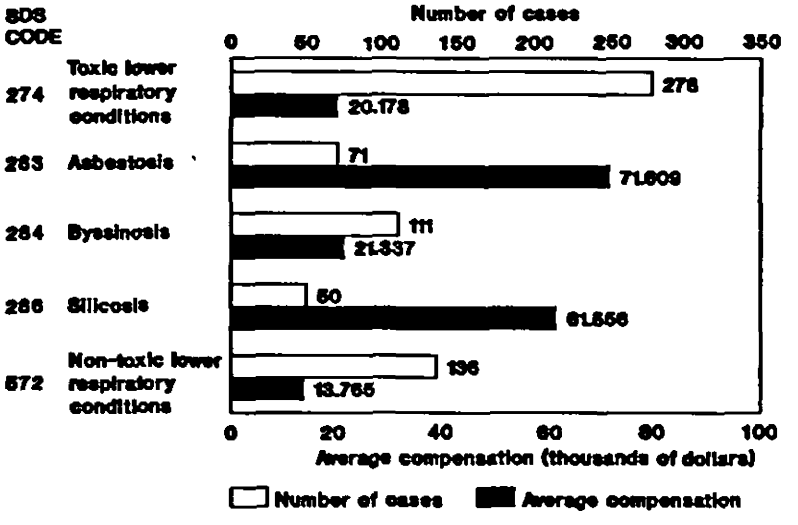
Compensation

The eight states providing indemnity compensation information were: Arkansas, Delaware, Iowa, New York, North Carolina, Oregon, Washington, and Wisconsin.

See Appendix for more information about Work Injuries and Illnesses Supplementary Data System.

See Table 58 for data.

Figure 21. Indemnity compensation for selected occupational respiratory conditions reported by eight state workers' compensation agencies, 1986



Tables

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Silicosis

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Toxic Agents

Occupational Illness

Dust Diseases of the Lungs

Dust Exposure Data

Compensation

Table 1. Estimated numbers of workers with potential exposure to asbestos dust, by state, 1986

State	Workers with Potential Exposure	
	Estimate # 1	Estimate # 2
Alabama	10,306	11,484
Alaska	722	1,298
Arizona	11,249	12,425
Arkansas	6,528	6,953
California	76,882	80,448
Colorado	7,420	9,794
Connecticut	14,045	14,140
District of Columbia	807	811
Delaware	1,961	1,965
Florida	29,715	30,746
Georgia	18,198	18,978
Hawaii	1,477	1,496
Idaho	1,577	1,893
Illinois	37,523	39,928
Indiana	20,748	21,562
Iowa	7,451	7,623
Kansas	6,755	8,147
Kentucky	10,679	14,475
Louisiana	9,344	15,396
Maine	3,064	3,080
Maryland	11,239	11,509
Massachusetts	23,847	24,010
Michigan	27,725	28,790
Minnesota	10,989	11,578
Mississippi	6,743	7,444
Missouri	13,753	14,320
Montana	990	1,537
Nebraska	3,067	3,200
Nevada	2,206	2,663
New Hampshire	4,633	4,662
New Jersey	24,234	24,461
New Mexico	2,703	4,473
New York	43,104	43,683
North Carolina	18,780	19,098
North Dakota	936	1,453
Ohio	39,745	41,916
Oklahoma	6,449	10,561
Oregon	6,039	6,224
Pennsylvania	36,987	40,296
Rhode Island	4,286	4,305
South Carolina	10,391	10,550
South Dakota	1,251	1,496
Tennessee	15,440	16,135
Texas	44,031	61,023
Utah	4,194	5,000
Vermont	1,884	1,955
Virginia	17,140	19,067
Washington	10,062	10,332
West Virginia	3,035	7,054
Wisconsin	15,566	15,704
Wyoming	829	2,891
TOTAL	688,729	760,032

NOTE: Both Estimate # 1 and Estimate # 2 are based on 1986 County Business Patterns and National Occupational Exposure Survey (NOES) estimates of the numbers of workers potentially exposed to asbestos. The differences between the two estimates are for establishments engaged in mining (SICs 10-14). The only NOES estimate used for SICs 10-14 is 0.49% of workers in SIC 1389. Estimate # 1 assumes 0.49% of workers in SIC 138 have potential exposure, but all other workers in SICs 10-14 have 0% potential exposure. Estimate # 2 assumes 10% of all workers in SICs 10-14 (and also SIC 138) have potential exposure to asbestos.

Table 2. Non-mining industries with the highest proportions of workers potentially exposed to asbestos dust, 1986

SIC	Description	Percent exposed (NOES)	Estimated workers exposed (1986)
329	Abrasive, asbestos, and miscellaneous nonmetallic mineral products	49.5	55,894
176	Roofing and sheet metal work	32.2	64,897
355	Special industry machinery, except metalworking machinery	24.2	40,954
363	Household appliances	18.8	24,782
179	Miscellaneous special trade contractors	16.3	68,288
339	Miscellaneous primary metal products	16.1	4,563
335	Rolling, drawing,and extruding of nonferrous metals	11.4	18,477
245	Wood buildings and mobile homes	11.3	7,340
285	Paints, varnishes, lacquers, enamels, and allied products	10.7	5,979
375	Motorcycles, bicycles, and parts	10.0	1,228

NOTE: Estimates of the proportion of workers potentially exposed to asbestos dust are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES).

Table 3. Non-mining industries with the largest numbers of workers potentially exposed to asbestos dust, 1986

SIC	Description	Percent exposed (NOES)	Estimated workers exposed (1986)
179	Miscellaneous special trade contractors	16.3	68,288
176	Roofing and sheet metal work	32.2	64,897
329	Abrasive, asbestos, and miscellaneous nonmetallic mineral products	49.5	55,894
367	Electronic components and accessories	9.7	54,069
355	Special industry machinery, except metalworking machinery	26.2	40,954
344	Fabricated structural metal products	9.0	35,561
753	Automotive repair shops	7.6	32,869
363	Household appliances	18.8	24,782
171	Plumbing, heating (except electric), and air conditioning	3.7	21,404
335	Rolling, drawing,and extruding of nonferrous metals	11.4	18,477

NOTE: Estimates of the number of workers potentially exposed to asbestos dust are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES).

Table 4. Medicare hospitalizations with any mention of asbestosis, by state, from 1984 to 1989

State	Number of hospitalizations					
	1984	1985	1986	1987	1988	1989
Alabama	60	69	111	136	138	181
Alaska	-	3	7	6	-	5
Arizona	66	32	51	88	47	64
Arkansas	26	12	34	21	53	14
California	607	578	587	766	866	884
Colorado	16	32	21	45	24	41
Connecticut	48	66	64	64	71	117
Delaware	30	34	41	52	52	52
District of Columbia	11	1	4	11	13	3
Florida	199	255	294	319	402	482
Georgia	54	40	48	90	84	115
Hawaii	17	19	11	12	17	22
Idaho	25	28	24	30	11	35
Illinois	96	111	200	156	138	220
Indiana	16	11	10	24	25	55
Iowa	15	8	27	24	22	34
Kansas	5	26	20	38	23	31
Kentucky	19	26	25	50	34	55
Louisiana	94	84	112	89	127	184
Maine	81	69	81	103	83	81
Maryland	63	96	143	156	175	198
Massachusetts	68	158	289	385	346	369
Michigan	43	34	36	42	51	71
Minnesota	22	47	25	49	70	78
Mississippi	70	57	124	150	186	199
Missouri	64	65	58	69	98	105
Montana	4	13	8	12	21	28
Nebraska	14	11	16	35	28	33
Nevada	22	25	14	17	30	13
New Hampshire	23	37	27	48	49	36
New Jersey	326	497	726	612	712	760
New Mexico	6	13	10	13	16	27
New York	84	193	288	349	401	437
North Carolina	52	42	67	110	157	161
North Dakota	21	-	-	1	-	9
Ohio	38	62	124	145	140	206
Oklahoma	15	16	22	15	25	12
Oregon	92	107	63	103	108	72
Pennsylvania	439	520	512	626	632	826
Rhode Island	17	15	8	12	16	22
South Carolina	31	55	83	83	96	79
South Dakota	1	7	3	6	1	6
Tennessee	42	68	95	77	107	76
Texas	150	214	213	318	359	529
Utah	13	10	18	17	10	10
Vermont	3	3	4	5	5	10
Virginia	122	114	154	227	301	281
Washington	210	160	234	250	265	272
West Virginia	32	67	49	99	99	91
Wisconsin	34	38	30	45	53	62
Wyoming	3	3	10	1	9	-
TOTAL	3,626	4,252	5,226	6,203	6,801	7,758

NOTE: Asbestosis = ICD-9CM code 501.

SOURCE: Medicare Provider Analysis and Review (MEDPAR), Office of Statistics and Data Management, Bureau of Data Management and Strategy, Health Care Financing Administration.

- indicates quantity zero.

Table 5. Asbestosis cases reported to state workers' compensation agencies, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama.....								
Alaska.....		-	-	-	1	2	3	-
Arizona.....	-	-	1	-	-	-	1	-
Arkansas.....	1	-	-	-	-	-	1	-
California.....	11	10	7	25	8	8	28	22
Colorado.....	3	-	-	5	1	5	5	11
Connecticut....								
Delaware.....	2	2	5	6	8	10	15	4
District of Columbia.....								
Florida.....								
Georgia.....								
Hawaii.....	-	-	1	-	1	15	18	29
Idaho.....	-	-						
Illinois.....								
Indiana.....	1	1	1	-	-	1	-	-
Iowa.....	-	3	-	-	1	1	3	1
Kansas.....								
Kentucky.....	3	8	19	3	4	4	5	5
Louisiana.....						-	-	8
Maine.....	-	-	8					15
Maryland.....	1	2	4	1	2	3	-	1
Massachusetts..	-							
Michigan.....	-	1	-	1	2	2	1	2
Minnesota.....	6	15	6	12	8			
Mississippi....	1	26	32	163	4	47	32	240
Missouri.....	2	2	1	2	1	1	3	3
Montana.....	-	-	-	-	-			
Nebraska.....	1	-	-	1	-	2	4	3
Nevada.....								
New Hampshire..								
New Jersey.....	2							
New Mexico.....	-	-	-	-	-	-	-	-
New York.....	29	16	22	22	22	34	33	48
North Carolina.	8	10	8	19	17	3	4	10
North Dakota...								
Ohio.....	12	34	44	44	45	86	461	1,099
Oklahoma.....							-	
Oregon.....	-	-	1	4	6	5	-	3
Pennsylvania...								
Rhode Island...								
South Carolina.								
South Dakota...								
Tennessee.....	3	2	16	2	2	9	8	50
Texas.....								
Utah.....	1	1	-	2	2	2		
Vermont.....	2	-	-	-	-			
Virginia.....	5		15	21	18	12	2	2
Washington.....	36	42	33	62	51	47	38	28
West Virginia..								
Wisconsin.....	4	6	9	5	7	13	15	21
Wyoming.....	-	-	-	-	-	-	-	-

NOTE: Asbestos = SDS code 283. Statistics for Arkansas, Delaware, New York, and North Carolina are for closed cases. Statistics for other states are for cases that occurred or were received during the year.

SOURCE: Bureau of Labor Statistics Supplementary Data System.

- indicates quantity zero. Empty space indicates information not available.

Table 6. Multiple cause of death listings with any mention of asbestosis in United States residents age 15 and over, from 1968 to 1987

Year	Number of cases
1968	77
1969	71
1970	87
1971	83
1972	138
1973	117
1974	114
1975	126
1976	143
1977	163
1978	240
1979	309
1980	339
1981	318
1982	428
1983	476
1984	445
1985	534
1986	702
1987	710

NOTE: Asbestosis = ICD-8 code 515.2 and ICD-9 code 501.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1968-87.

Table 7. Multiple cause of death listings with any mention of malignant neoplasm of pleura in United States residents age 15 and over, from 1968 to 1987

Year	Number of cases
1968	390
1969	366
1970	424
1971	431
1972	426
1973	394
1974	412
1975	428
1976	446
1977	434
1978	471
1979	448
1980	457
1981	453
1982	504
1983	490
1984	532
1985	467
1986	494
1987	504

NOTE: Malignant neoplasm of pleura = ICD-8 code 163.0 (malignant neoplasm of pleura) and ICD-9 codes 163.0 (malignant neoplasm of parietal pleura), 163.1 (malignant neoplasm of visceral pleura), and 163.9 (malignant neoplasm of pleura, unspecified).

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1968-87.

Table 8. Multiple cause of death listings with any mention of malignant neoplasm of peritoneum in United States residents age 15 and over, from 1968 to 1987

Year	Number of cases
1968	430
1969	394
1970	444
1971	400
1972	410
1973	409
1974	398
1975	399
1976	409
1977	414
1978	341
1979	281
1980	249
1981	259
1982	257
1983	231
1984	262
1985	255
1986	249
1987	316

NOTE: Malignant neoplasm of peritoneum = ICD-8 code 158.9 (malignant neoplasm of peritoneum, excluding malignant neoplasm of retroperitoneal tissue) and ICD-9 codes 158.8 (malignant neoplasm of specified parts of peritoneum) and 158.9 (malignant neoplasm of peritoneum, unspecified).

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1968-87.

Table 9. Multiple cause of death listings with any mention of asbestosis in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama	2	-	5	4	4	7	9	6
Alaska	-	-	-	-	-	-	1	-
Arizona	2	2	6	3	7	10	5	8
Arkansas	1	2	2	1	3	-	7	10
California	59	57	86	67	77	83	112	80
Colorado	-	-	-	6	7	3	6	3
Connecticut	3	4	2	11	7	8	12	9
Delaware	-	-	-	3	-	1	3	3
District of Columbia	-	1	-	1	-	-	2	1
Florida	10	9	12	20	19	27	35	41
Georgia	4	2	8	5	2	4	11	12
Hawaii	-	1	3	1	2	5	2	3
Idaho	-	-	4	1	2	2	3	6
Illinois	8	13	4	11	11	14	15	10
Indiana	4	2	6	3	4	3	3	3
Iowa	-	1	-	1	1	3	4	6
Kansas	-	-	1	1	-	2	3	5
Kentucky	-	6	2	-	2	4	4	3
Louisiana	3	5	9	9	4	11	11	7
Maine	6	11	3	8	3	7	11	9
Maryland	2	7	11	12	9	13	16	18
Massachusetts	33	14	26	29	16	24	37	31
Michigan	4	4	5	8	3	6	6	11
Minnesota	6	2	4	9	8	1	5	4
Mississippi	2	5	10	4	1	5	8	12
Missouri	2	5	8	6	3	9	12	7
Montana	-	2	2	2	2	3	2	1
Nebraska	-	-	-	-	1	-	4	5
Nevada	1	2	1	1	1	3	4	3
New Hampshire	5	5	3	5	1	1	9	6
New Jersey	46	43	52	51	49	63	82	80
New Mexico	1	1	1	1	-	1	1	4
New York	13	12	16	25	24	10	25	30
North Carolina	8	4	6	9	10	15	13	17
North Dakota	2	-	2	1	-	-	-	-
Ohio	9	8	10	9	10	17	14	21
Oklahoma	-	-	4	6	-	2	2	5
Oregon	6	9	8	13	13	10	12	18
Pennsylvania	35	32	33	36	60	54	54	65
Rhode Island	1	6	4	4	3	2	3	-
South Carolina	4	2	4	8	6	9	9	8
South Dakota	-	-	-	1	-	1	-	-
Tennessee	3	-	10	5	5	8	10	4
Texas	8	6	12	19	12	26	25	48
Utah	1	2	1	1	1	-	2	2
Vermont	-	-	1	1	1	1	1	2
Virginia	14	11	11	18	14	27	24	22
Washington	23	18	20	24	28	21	47	40
West Virginia	4	-	4	6	3	5	11	15
Wisconsin	4	2	6	6	6	3	5	4
Wyoming	-	-	-	-	-	-	-	2
TOTAL	339	318	428	476	445	534	702	710

NOTE: Asbestosis = ICD-9 code 501.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 10. Multiple cause of death listings with any mention of malignant neoplasm of pleura in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama.....	9	10	2	3	13	10	8	8
Alaska.....	-	-	-	2	-	-	-	-
Arizona.....	6	-	7	8	5	5	10	7
Arkansas.....	2	4	4	-	1	3	2	6
California.....	38	46	47	42	41	50	45	48
Colorado.....	6	5	4	2	5	5	8	7
Connecticut....	5	7	7	8	6	7	5	5
Delaware.....	1	1	1	3	5	1	3	1
District of Columbia.....	3	-	-	-	2	-	2	1
Florida.....	31	33	47	39	57	36	30	58
Georgia.....	1	10	10	2	4	8	7	4
Hawaii.....	-	1	2	-	-	-	3	2
Idaho.....	-	-	-	-	3	2	2	3
Illinois.....	32	30	28	33	29	26	26	21
Indiana.....	8	20	2	5	5	5	10	11
Iowa.....	8	11	11	15	12	7	8	10
Kansas.....	5	2	6	6	10	3	3	7
Kentucky.....	8	-	10	3	9	9	4	5
Louisiana.....	7	12	3	8	6	3	3	4
Maine.....	4	2	3	4	4	-	3	3
Maryland.....	3	9	6	6	6	12	15	5
Massachusetts..	10	10	18	7	18	12	11	6
Michigan.....	13	17	11	24	16	13	21	17
Minnesota.....	9	7	7	11	7	4	6	9
Mississippi....	2	4	4	1	8	4	6	2
Missouri.....	6	10	8	6	6	4	6	8
Montana.....	3	1	2	5	4	3	2	2
Nebraska.....	3	1	2	2	2	2	2	2
Nevada.....	1	-	-	2	1	-	1	-
New Hampshire..	-	1	3	3	4	3	3	-
New Jersey.....	38	34	41	49	44	28	20	17
New Mexico.....	1	3	1	1	2	2	2	1
New York.....	37	50	48	38	52	45	45	65
North Carolina.	13	7	5	6	4	10	8	20
North Dakota...	2	-	-	2	3	3	3	1
Ohio.....	19	12	26	18	26	17	19	19
Oklahoma.....	7	-	4	1	6	5	7	3
Oregon.....	6	4	6	9	4	7	18	9
Pennsylvania...	30	27	26	28	19	29	30	31
Rhode Island...	1	3	2	3	2	1	6	3
South Carolina.	6	8	11	7	6	8	9	7
South Dakota...	1	3	1	-	2	4	-	1
Tennessee.....	5	6	12	11	8	11	12	9
Texas.....	21	12	14	20	12	11	15	11
Utah.....	-	2	-	2	4	2	3	2
Vermont.....	-	2	-	-	1	-	1	-
Virginia.....	7	4	10	10	10	13	5	10
Washington.....	19	8	25	21	20	22	22	24
West Virginia..	5	6	6	4	6	3	1	2
Wisconsin.....	14	7	10	10	11	9	12	7
Wyoming.....	1	1	1	-	1	-	1	-
TOTAL.....	457	453	504	490	532	467	494	504

NOTE: Malignant neoplasm of pleura = ICD-9 codes 163.0 (malignant neoplasm of parietal pleura), 163.1 (malignant neoplasm of visceral pleura), and 163.9 (malignant neoplasm of pleura, unspecified).

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 11. Multiple cause of death listings with any mention of malignant neoplasm of peritoneum in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama	6	4	2	2	1	6	1	2
Alaska	-	-	-	-	-	1	-	-
Arizona	-	-	-	2	-	1	1	6
Arkansas	3	2	-	1	2	1	-	2
California	21	34	20	19	20	16	23	32
Colorado	1	1	1	-	1	-	4	5
Connecticut	1	3	3	-	3	4	5	8
Delaware	-	1	1	-	-	1	-	1
District of Columbia	1	1	-	2	1	-	-	-
Florida	14	10	12	12	18	10	13	25
Georgia	9	4	2	4	5	2	1	3
Hawaii	-	1	2	-	1	-	-	1
Idaho	2	-	2	-	1	1	1	1
Illinois	21	20	20	23	20	26	22	24
Indiana	4	6	2	4	4	2	8	2
Iowa	2	9	2	6	6	5	2	3
Kansas	3	7	1	3	3	2	5	2
Kentucky	5	2	-	1	2	4	2	3
Louisiana	1	5	1	3	3	5	3	2
Maine	1	-	-	2	1	-	1	-
Maryland	5	4	3	4	1	8	13	7
Massachusetts	3	9	10	14	6	3	9	11
Michigan	6	6	6	7	11	11	11	9
Minnesota	1	4	3	2	4	4	4	1
Mississippi	4	2	3	-	2	4	-	2
Missouri	6	7	4	4	7	4	4	1
Montana	-	2	-	-	3	2	-	-
Nebraska	1	1	3	-	-	1	2	3
Nevada	1	1	3	-	1	-	2	-
New Hampshire	-	3	1	1	-	4	-	4
New Jersey	15	15	13	13	12	4	7	10
New Mexico	-	1	-	1	-	2	1	1
New York	34	29	31	25	33	26	22	34
North Carolina	8	4	4	7	7	6	6	7
North Dakota	1	-	2	-	-	-	1	2
Ohio	10	11	22	14	12	9	9	14
Oklahoma	1	2	4	4	3	3	2	4
Oregon	1	1	-	1	1	1	-	7
Pennsylvania	13	20	24	18	19	17	15	13
Rhode Island	2	-	-	1	3	1	2	2
South Carolina	3	3	1	2	5	4	2	6
South Dakota	-	-	-	-	-	-	1	-
Tennessee	7	2	2	4	4	4	6	6
Texas	14	4	22	13	12	15	9	29
Utah	-	-	1	-	1	-	1	-
Vermont	-	-	-	2	-	1	1	-
Virginia	2	7	9	4	8	7	6	7
Washington	5	7	8	2	7	6	7	5
West Virginia	2	-	2	2	1	6	2	-
Wisconsin	9	4	5	2	7	15	11	8
Wyoming	-	-	-	-	-	-	1	1
TOTAL	249	259	257	231	262	255	249	316

NOTE: Malignant neoplasm of peritoneum = ICD-9 codes 158.8 (malignant neoplasm of specified parts of peritoneum) and 158.9 (malignant neoplasm of peritoneum, unspecified).

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 12. Mining industries with the largest numbers of workers potentially exposed to coal mine dust, 1989

Industry	Estimated workers exposed (1989)
Anthracite mining	2,220
Bituminous coal and lignite mining	135,610
Total (SIC 111 and 121)	137,830

NOTE: Estimates are based on Mine Safety and Health Administration Informational Report for 1989, assuming that 100% of non-office workers in these industries have potential exposure to coal mine dust.

Table 13. Estimated numbers of workers with potential exposure to coal mine dust, by state, 1986

State	Workers with Potential Exposure	
	Estimate # 1	Estimate # 2
Alabama	7,307	8,468
Alaska	106	175
Arizona	907	1,750
Arkansas	55	26
California	-	10
Colorado	2,245	3,895
Connecticut	-	60
District of Columbia	-	10
Delaware	-	10
Florida	-	175
Georgia	-	60
Hawaii	-	-
Idaho	-	10
Illinois	14,254	15,579
Indiana	4,482	3,750
Iowa	188	194
Kansas	140	175
Kentucky	36,170	37,500
Louisiana	55	60
Maine	-	-
Maryland	587	598
Massachusetts	-	60
Michigan	-	10
Minnesota	-	10
Mississippi	-	10
Missouri	1,131	1,750
Montana	997	1,750
Nebraska	-	-
Nevada	-	175
New Hampshire	-	10
New Jersey	-	10
New Mexico	1,676	1,702
New York	-	60
North Carolina	-	60
North Dakota	1,064	1,750
Ohio	8,685	10,892
Oklahoma	789	744
Oregon	-	-
Pennsylvania	21,544	23,430
Rhode Island	-	-
South Carolina	-	60
South Dakota	-	10
Tennessee	2,571	3,750
Texas	3,614	3,750
Utah	2,376	3,358
Vermont	-	-
Virginia	13,800	15,709
Washington	762	750
West Virginia	33,535	37,500
Wisconsin	-	10
Wyoming	4,291	5,708
Total Workers Employed by Mine Operators	163,331	
Total Workers Employed by Mine Contractors	12,269	
TOTAL	175,600	185,533

NOTE: Estimate # 1 = from MSHA informational reports, excludes office workers.
Estimate # 2 = from County Business Patterns for SIC 111 and SIC 121.
For additional details, see Appendix.

- indicates quantity zero. Empty space indicates information not available.

Table 14. Number of discharges with any mention of coal workers' pneumoconiosis from short-stay nonfederal hospitals, from 1970 to 1987

Year	Number of discharges
1970	6,000
1971	8,000
1972	11,000
1973	13,000
1974	14,000
1975	17,000
1976	18,000
1977	18,000
1978	13,000
1979	18,000
1980	17,000
1981	14,000
1982	17,000
1983	22,000
1984	23,000
1985	18,000
1986	16,000
1987	17,000

NOTE: Number of discharges have been rounded off to nearest thousand.

SOURCE: National Center for Health Statistics National Hospital Discharge Survey.

Table 15. Number of cases of pneumoconiosis identified in the Coal Workers' X-ray Surveillance Program (CWXSP) from 1987 to 1989, by tenure (years in coal mining)

Years in coal mining	1987			1988			1989		
	X-rays taken	ILO Cat ≥ 1/0 (N)	(%)	X-rays taken	ILO Cat ≥ 1/0 (N)	(%)	X-rays taken	ILO Cat ≥ 1/0 (N)	(%)
0.....	396	-	0.0	377	3	0.8	547	2	0.4
1.....	72	-	0.0	71	-	0.0	87	-	0.0
2-4.....	274	-	0.0	200	1	0.5	197	3	1.5
5-9.....	716	7	1.0	629	12	1.9	402	8	2.0
10-14.....	749	22	2.9	1,049	35	3.3	699	24	3.4
15-19.....	360	23	6.4	609	37	6.1	339	14	4.1
20-24.....	106	11	10.6	185	17	9.2	132	14	10.6
25-29.....	48	7	14.6	61	14	23.0	42	7	16.7
30+.....	70	12	17.1	108	20	18.5	32	9	28.1
Total.....	2,791	82	2.9	3,289	139	4.2	2,477	81	3.3

NOTE: Pneumoconiosis = International Labour Office small opacity profusion category ≥ 1/0. For miners with more than one chest radiograph on file between 1987 to 1989, statistics in this table were calculated based on the most recent radiograph.

SOURCE: Examination Processing Branch, DRDS, NIOSH.

- indicates quantity zero.

Table 16. Anthracosis (coal workers' pneumoconiosis) cases reported to state workers' compensation agencies, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama.....								
Alaska.....		-	-	-	-	-	-	-
Arizona.....	-	-	-	-	-	-	-	-
Arkansas.....	-	-	-	-	-	-	-	-
California.....	-	-	-	-	-	-	-	-
Colorado.....	1	-	1	-	-	-	3	3
Connecticut....								
Delaware.....	-	-	-	-	-	-	-	-
District of Columbia.....								
Florida.....								
Georgia.....								
Hawaii.....	-	-	-	-	-	-	-	-
Idaho.....	-	-						
Illinois.....								
Indiana.....	1	-	2	-	-	-	1	-
Iowa.....	3	-	-	-	-	1	-	-
Kansas.....								
Kentucky.....	888	521	396	723	754	676	731	838
Louisiana.....						-	-	-
Maine.....	-	-	-					-
Maryland.....	-	-	1	-	-	-	-	-
Massachusetts..	-							
Michigan.....	-	-	-	-	-	-	-	-
Minnesota.....	-	-	-	-	-			
Mississippi....	-	-	-	-	-	-	-	-
Missouri.....	-	-	-	-	-	-	-	-
Montana.....	-	-	-	-	-			
Nebraska.....	-	-	-	-	-	-	-	-
Nevada.....								
New Hampshire..								
New Jersey.....	-							
New Mexico.....	-	-	-	-	-	-	-	-
New York.....	-	1	-	-	-	-	-	-
North Carolina.	-	-	-	-	-	-	-	-
North Dakota...								
Ohio.....	12	10	3	7	7	6	10	8
Oklahoma.....								-
Oregon.....	-	-	-	-	-	-	-	-
Pennsylvania...								
Rhode Island...								
South Carolina.								
South Dakota...								
Tennessee.....	3	4	4	-	-	2	3	3
Texas.....								
Utah.....	-	1	-	-	-	-		
Vermont.....	-	-	-	-	-	-		
Virginia.....	10		-	-	-	75	4	6
Washington.....	-	-	-	-	-	-	-	-
West Virginia..								
Wisconsin.....	-	-	-	-	-	-	-	-
Wyoming.....	-	-	-	-	-	-	-	-

NOTE: Anthracosis = SDS code 282. Statistics for Arkansas, Delaware, New York, and North Carolina are for closed cases. Statistics for other states are for cases that occurred or were received during the year.

SOURCE: Bureau of Labor Statistics Supplementary Data System.

- indicates quantity zero. Empty space indicates information not available.

Table 17. Medicare hospitalizations with any mention of coal workers' pneumoconiosis, by state, from 1984 to 1989

State	Number of hospitalizations					
	1984	1985	1986	1987	1988	1989
Alabama	247	328	453	664	662	493
Alaska	-	-	5	-	-	2
Arizona	73	53	57	45	53	50
Arkansas	38	36	39	30	27	21
California	248	139	193	170	128	146
Colorado	72	86	87	84	62	71
Connecticut	49	46	34	42	44	30
Delaware	12	2	11	18	21	19
District of Columbia	21	14	24	18	13	10
Florida	300	365	285	367	359	294
Georgia	29	59	38	49	42	24
Hawaii	1	-	-	4	-	-
Idaho	11	6	5	6	3	7
Illinois	480	438	450	424	330	293
Indiana	162	169	142	179	231	192
Iowa	29	30	33	48	43	24
Kansas	21	23	30	17	38	10
Kentucky	1,163	1,449	1,251	1,398	1,407	1,257
Louisiana	22	31	21	35	40	16
Maine	8	7	3	1	-	4
Maryland	71	144	110	108	75	101
Massachusetts	23	41	13	35	36	40
Michigan	163	154	178	170	149	139
Minnesota	9	6	15	5	8	12
Mississippi	11	9	9	8	21	18
Missouri	70	76	65	72	65	50
Montana	5	11	7	11	7	8
Nebraska	11	4	5	8	2	1
Nevada	17	11	5	7	10	4
New Hampshire	1	1	-	5	-	-
New Jersey	100	131	148	150	182	112
New Mexico	30	52	40	32	48	26
New York	71	125	131	179	145	168
North Carolina	79	80	126	135	122	120
North Dakota	1	5	5	2	4	7
Ohio	431	560	736	885	799	667
Oklahoma	23	41	37	35	48	23
Oregon	29	24	31	32	27	21
Pennsylvania	4,312	4,046	4,161	4,055	3,987	3,258
Rhode Island	3	4	3	-	-	3
South Carolina	10	13	20	9	27	48
South Dakota	1	9	-	1	5	1
Tennessee	400	560	590	532	467	352
Texas	140	96	107	102	97	85
Utah	87	182	179	161	164	131
Vermont	1	2	-	-	1	1
Virginia	1,329	1,677	1,226	1,734	1,628	1,440
Washington	51	44	27	27	27	48
West Virginia	2,089	2,151	1,828	2,212	2,254	2,111
Wisconsin	16	10	3	18	29	24
Wyoming	6	20	36	53	34	55
TOTAL	12,585	13,574	13,005	14,387	13,979	12,042

NOTE: Coal workers' pneumoconiosis = ICD-9CM code 500.

SOURCE: Medicare Provider Analysis and Review (MEDPAR), Office of Statistics and Data Management, Bureau of Data Management and Strategy, Health Care Financing Administration.

- indicates quantity zero.

Table 18. Number of cases submitted to the National Coal Workers' Autopsy Study (NCWAS), and the number diagnosed as having pneumoconiosis, from 1971 to 1989

Year	Number of cases submitted to NCWAS program	Diagnosed as having pneumoconiosis by submitting pathologist	
		n	%
1971	68	58	85.3
1972	313	287	91.7
1973	291	267	91.8
1974	628	563	89.6
1975	389	321	82.5
1976	376	321	85.4
1977	345	304	88.1
1978	320	254	79.4
1979	322	258	80.1
1980	314	259	82.5
1981	255	**	**
1982	235	**	**
1983	310	**	**
1984	259	**	**
1985	249	**	**
1986	231	**	**
1987	220	**	**
1988	183	**	**
1989	191	**	**

NOTE: Pneumoconiosis = ICD-8 code 515 (pneumoconiosis due to silica and silicates), including: silicosis (515.0); anthracosilicosis (515.1); asbestosis (515.2); and other, including pneumoconiosis unspecified (515.9).

SOURCE: Examination Processing Branch, DRDS, NIOSH.

** This information is not currently available beyond 1980.

Table 19. Multiple cause of death listings with any mention of coal workers' pneumoconiosis in United States residents age 15 and over, from 1968 to 1987

Year	Number of cases
1968	1,775
1969	1,534
1970	2,189
1971	2,544
1972	2,870
1973	2,670
1974	2,732
1975	2,708
1976	2,481
1977	2,340
1978	2,280
1979	2,417
1980	2,576
1981	2,554
1982	2,753
1983	2,701
1984	2,683
1985	2,615
1986	2,443
1987	2,257

NOTE: Coal workers' pneumoconiosis = ICD-8 code 515.1 and ICD-9 code 500.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1968-87.

Table 20. Multiple cause of death listings with any mention of coal workers' pneumoconiosis in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama	13	18	40	32	26	30	32	23
Alaska	-	-	-	-	1	-	1	-
Arizona	8	14	10	9	10	8	7	2
Arkansas	7	4	8	8	4	9	6	7
California	24	24	21	25	24	20	23	18
Colorado	10	16	15	10	25	22	15	15
Connecticut	7	3	1	4	7	6	3	3
Delaware	3	3	-	4	3	1	4	1
District of Columbia	-	1	1	1	-	-	-	-
Florida	32	52	26	35	32	20	38	34
Georgia	2	4	2	1	4	3	6	2
Hawaii	-	1	1	-	-	-	1	-
Idaho	-	-	-	-	-	2	-	1
Illinois	41	86	68	68	83	78	64	63
Indiana	22	24	16	22	25	21	22	25
Iowa	5	11	6	8	6	10	8	3
Kansas	1	1	3	2	6	6	7	2
Kentucky	130	159	242	196	177	195	182	161
Louisiana	-	-	-	3	2	2	1	2
Maine	-	-	-	-	-	1	-	-
Maryland	8	13	19	19	3	5	8	8
Massachusetts	3	1	2	-	-	-	1	-
Michigan	15	19	23	24	14	17	16	21
Minnesota	1	-	4	1	1	-	-	-
Mississippi	-	2	2	-	1	1	-	1
Missouri	5	9	10	5	2	5	4	7
Montana	-	2	-	-	1	2	3	1
Nebraska	-	-	1	-	-	-	-	-
Nevada	-	1	2	1	3	2	-	-
New Hampshire	-	-	-	-	-	-	-	-
New Jersey	17	15	18	21	22	11	12	18
New Mexico	2	2	4	6	4	5	4	2
New York	24	16	15	15	6	11	16	13
North Carolina	12	9	8	15	4	7	10	12
North Dakota	-	-	-	-	-	-	1	1
Ohio	92	105	86	105	93	105	92	91
Oklahoma	2	10	4	6	3	4	5	8
Oregon	3	1	4	3	2	-	2	3
Pennsylvania	1,719	1,602	1,594	1,515	1,552	1,488	1,303	1,211
Rhode Island	-	-	-	-	-	-	-	-
South Carolina	4	1	1	2	1	2	1	2
South Dakota	1	2	1	1	1	-	1	-
Tennessee	25	35	33	37	41	40	39	39
Texas	4	5	12	7	8	11	7	1
Utah	1	6	14	4	17	14	16	12
Vermont	-	-	-	1	-	1	-	1
Virginia	56	66	110	129	133	167	169	150
Washington	7	2	6	4	4	3	7	6
West Virginia	262	204	315	345	326	281	302	284
Wisconsin	2	3	3	3	1	1	-	1
Wyoming	6	2	2	4	5	6	4	2
TOTAL	2,576	2,554	2,753	2,701	2,683	2,615	2,443	2,257

NOTE: Coal workers' pneumoconiosis = ICD-9 code 500.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 21. Estimated number of underground coal miners and number of miners examined in the Coal Workers' X-ray Surveillance Program (CWXSP), from 1970 to 1987

Years	Estimated number of underground coal miners	Total miners x-rayed
1970-73	101,000	80,521
1973-78	150,000	124,441
1978-81	142,000	63,324
1982-87	102,000	41,157

NOTE: Miners x-rayed as part of the National Study for Coal Workers' Pneumoconiosis are included in the CWXSP total.

SOURCE: Mine Safety and Health Administration informational reports an coal mining and Examination Processing Branch, DRDS, NIOSH

Table 22. Non-mining industries with the highest proportions of workers potentially exposed to respirable crystalline silica dust, 1986

SIC	Description	Percent exposed (NOES)	Estimated workers exposed (1986)
326	Pottery and related products	81.7	29,772
295	Paving and roofing materials	65.3	17,352
321	Flat glass	39.5	8,570
327	Concrete, gypsum, and plaster products	33.3	63,456
174	Masonry, stonework, tile setting, and plastering	32.7	131,986
807	Medical and dental laboratories	30.0	37,063
289	Miscellaneous chemical products	28.1	24,401
176	Roofing and sheet metal work	25.3	51,153
493	Combination electric and gas, and other utilities services	21.2	35,074
329	Abrasive, asbestos, and miscellaneous non-metallic mineral products	17.8	20,063

NOTE: Estimates of the number of workers potentially exposed to the hazards of flint, quartz, sand, or silica powder are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES). For SICs where the estimates differed for individual hazards, the highest percentage was used for that SIC.

Table 23. Industries with the largest numbers of workers potentially exposed to respirable crystalline silica dust, 1986

SIC	Description	Percent exposed (NOES)	Estimated workers exposed (1986)
174	Masonry, stonework, tile setting, and plastering	32.7	131,986
734	Services to dwellings and other buildings	10.3	65,812
327	Concrete, gypsum, and plaster products	33.3	63,456
176	Roofing and sheet metal work	25.3	51,153
356	General industrial machinery and equipment	16.2	44,991
807	Medical and dental laboratories	30.0	37,063
493	Combination electric and gas, and other utilities services	21.2	35,074
179	Miscellaneous special trade contractors	7.8	32,615
753	Automotive repair shops	7.1	30,826
326	Pottery and related products	81.7	29,772

NOTE: Estimates of the numbers of workers potentially exposed to the hazards of flint, quartz, sand, or silica powder are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES). For SICs where the estimates differed for individual hazards, the highest percentage was used for that SIC. If the above list had included mining industries and if the percent of mining industry workers with potential silica exposure is assumed to be 100%, the following would be listed.

13	Oil and gas extraction	100.0	408,175
12	Bituminous coal and lignite mining	100.0	174,131
14	Mining and quarrying of nonmetallic minerals, except fuels	100.0	100,546
10	Metal mining	100.0	39,856

Table 24. Estimated numbers of workers with potential exposure to respirable crystalline silica dust, by state, 1986

State	Workers with Potential Exposure
Alabama	26,172
Alaska	7,128
Arizona	28,690
Arkansas	11,553
California	145,722
Colorado	38,789
Connecticut	17,934
District of Columbia	2,994
Delaware	3,204
Florida	55,384
Georgi	33,640
Hawaii	2,737
Idaho	5,172
Illinois	73,606
Indiana	32,135
Iowa	10,778
Kansas	23,748
Kentucky	49,389
Louisiana	75,832
Maine	3,754
Maryland	25,284
Massachusetts	27,725
Michigan	46,669
Minnesota	22,289
Mississippi	14,856
Missouri	26,015
Montana	7,318
Nebraska	5,806
Nevada	8,532
New Hampshire	5,998
New Jersey	38,715
New Mexico	22,584
New York	71,660
North Carolina	30,074
North Dakota	6,700
Ohio	75,206
Oklahoma	53,002
Oregon	11,296
Pennsylvania	86,866
Rhode Island	4,099
South Carolina	18,366
South Dakota	3,953
Tennessee	27,715
Texas	241,694
Utah	13,865
Vermont	2,492
Virginia	44,333
Washington	16,585
West Virginia	45,359
Wisconsin	21,543
Wyoming	22,115
TOTAL	1,697,075

NOTE: Estimates of the number of workers potentially exposed to the hazards of flint, quartz, sand, or silica powder are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES).

Table 25. Medicare hospitalizations with any mention of silicosis, by state, from 1984 to 1989

State	Number of hospitalizations					
	1984	1985	1986	1987	1988	1989
Alabama	34	40	59	42	58	48
Alaska	4	10	8	7	2	1
Arizona	88	45	63	58	33	42
Arkansas	17	10	17	19	13	15
California	151	152	107	141	120	113
Colorado	35	57	76	52	38	57
Connecticut	28	25	22	26	12	15
Delaware	-	1	-	-	6	4
District of Columbia	4	-	4	10	3	6
Florida	76	62	83	80	95	62
Georgia	60	73	97	68	61	36
Hawaii	2	6	-	-	-	-
Idaho	22	14	4	18	16	18
Illinois	94	92	129	95	87	70
Indiana	69	78	35	31	30	22
Iowa	12	12	15	14	13	12
Kansas	14	15	6	15	7	8
Kentucky	42	24	29	50	72	50
Louisiana	50	49	48	36	32	37
Maine	13	9	13	17	7	-
Maryland	8	22	36	29	25	24
Massachusetts	14	42	47	44	27	21
Michigan	81	136	96	128	88	89
Minnesota	35	33	34	44	42	44
Mississippi	13	19	10	12	4	14
Missouri	60	95	80	55	77	89
Montana	9	12	30	22	10	17
Nebraska	9	1	-	1	3	6
Nevada	22	9	15	24	10	13
New Hampshire	12	8	2	5	25	4
New Jersey	64	50	101	88	88	64
New Mexico	16	41	27	14	16	16
New York	54	91	121	115	135	103
North Carolina	62	90	75	86	77	69
North Dakota	5	-	1	-	-	3
Ohio	197	195	228	270	220	191
Oklahoma	11	13	18	28	16	16
Oregon	12	18	21	12	8	12
Pennsylvania	422	432	375	325	310	345
Rhode Island	9	11	21	1	2	3
South Carolina	34	17	9	11	21	19
South Dakota	19	7	4	7	5	7
Tennessee	46	70	39	63	35	36
Texas	97	79	73	88	90	69
Utah	30	52	49	13	17	54
Vermont	20	11	12	26	12	10
Virginia	87	52	74	61	60	58
Washington	38	51	54	41	44	38
West Virginia	42	45	42	33	37	44
Wisconsin	76	91	90	77	90	54
Wyoming	6	4	5	4	4	4
TOTAL	2,428	2,573	2,605	2,506	2,303	2,152

NOTE: Silicosis = ICD-9CM code 502.

SOURCE: Medicare Provider Analysis and Review (MEDPAR), Office of Statistics and Data Management, Bureau of Data Management and Strategy, Health Care Financing Administration.

- indicates quantity zero.

Table 26. Silicosis cases reported to state workers' compensation agencies, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama								
Alaska		-	-	1	1	-	-	-
Arizona	2	-	-	-	-	-	-	-
Arkansas	2	2	-	-	-	-	-	-
California	-	2	-	-	-	4	2	6
Colorado	10	16	29	13	18	20	16	7
Connecticut								
Delaware	-	-	-	-	-	-	-	-
District of Columbia								
Florida								
Georgia								
Hawaii	-	-	-	-	-	-	-	-
Idaho	-	-						
Illinois								
Indiana	1	-	2	2	1	1	2	-
Iowa	-	2	-	1	-	2	2	-
Kansas								
Kentucky	91	31	36	36	51	21	16	22
Louisiana						-	-	2
Maine	-	-	-					-
Maryland	2	-	-	-	-	-	1	-
Massachusetts	-							
Michigan	1	1	-	-	2	-	2	-
Minnesota	-	-	-	-	3			
Mississippi	1	-	-	-	-	-	-	2
Missouri	4	1	1	1	2	1	-	-
Montana	-	-	-	-	-			
Nebraska	2	-	-	-	-	-	-	-
Nevada								
New Hampshire								
New Jersey	-							
New Mexico	-	-	-	-	-	3	-	-
New York	52	36	47	30	26	30	28	34
North Carolina	9	9	9	17	10	8	1	3
North Dakota								
Ohio	57	54	46	37	37	57	37	20
Oklahoma								
Oregon	1	-	-	-	-	-	-	-
Pennsylvania								
Rhode Island								
South Carolina								
South Dakota								
Tennessee	4	3	2	2	1	1	2	3
Texas								
Utah	1	-	-	-	2	-		
Vermont	1	1	1	-	-			
Virginia	6		3	-	39	-	-	-
Washington	1	-	1	2	1	-	-	1
West Virginia								
Wisconsin	11	15	9	25	22	19	21	33
Wyoming	-	1	-	1	-	-	-	-

NOTE: Silicosis = SDS code 286. Statistics for Arkansas, Delaware, New York, and North Carolina are for closed cases. Statistics for other states are for cases that occurred or were received during the year.

SOURCE: Bureau of Labor Statistics Supplementary Data System

- indicates quantity zero. Empty space indicates information not available.

Table 27. Multiple cause of death listings with any mention of silicosis in United States residents age 15 and over, from 1968 to 1987

Year	Number of cases
1968	1,157
1969	1,143
1970	1,086
1971	925
1972	982
1973	850
1974	789
1975	728
1976	671
1977	562
1978	538
1979	452
1980	448
1981	378
1982	390
1983	359
1984	381
1985	334
1986	318
1987	342

NOTE: Silicosis = ICD-8 codes 515.0 and 010, and ICD-9 code 502.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1968-87.

Table 28. Multiple cause of death listings with any mention of silicosis in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama	5	2	4	4	4	1	7	6
Alaska	-	-	2	-	-	1	2	-
Arizona	11	12	10	9	7	3	7	5
Arkansas	2	4	2	4	-	2	-	2
California	29	22	26	19	22	22	14	17
Colorado	8	16	7	13	10	7	8	8
Connecticut	6	3	7	4	9	6	3	2
Delaware	1	-	1	-	-	-	-	-
District of Columbia	1	1	3	-	1	-	1	-
Florida	13	17	6	11	10	10	14	11
Georgia	1	6	2	7	5	9	9	6
Hawaii	-	-	1	-	1	-	1	-
Idaho	1	2	2	1	2	1	-	4
Illinois	15	11	21	11	17	15	11	15
Indiana	9	6	6	8	7	3	6	8
Iowa	3	1	1	3	2	2	3	5
Kansas	1	3	4	2	-	2	-	5
Kentucky	4	4	12	6	3	10	5	2
Louisiana	2	6	2	5	2	5	3	5
Maine	3	1	1	-	1	1	1	3
Maryland	6	6	3	4	2	3	2	2
Massachusetts	8	5	4	2	2	3	5	5
Michigan	23	15	21	17	12	15	14	16
Minnesota	10	11	9	3	13	9	11	2
Mississippi	3	2	1	1	1	2	-	1
Missouri	9	6	5	2	9	7	2	7
Montana	3	2	4	4	2	5	5	3
Nebraska	-	-	-	-	-	-	-	-
Nevada	1	1	2	2	2	4	2	3
New Hampshire	-	-	3	1	1	1	1	1
New Jersey	13	13	10	10	17	8	9	12
New Mexico	10	4	3	1	2	2	2	1
New York	17	20	11	22	17	16	9	27
North Carolina	8	9	4	11	11	12	9	12
North Dakota	-	-	-	-	1	1	-	-
Ohio	42	38	50	32	47	31	41	29
Oklahoma	1	-	-	2	2	-	3	4
Oregon	5	3	4	3	2	1	-	2
Pennsylvania	94	75	64	68	60	55	49	52
Rhode Island	1	-	4	1	1	1	1	1
South Carolina	2	4	4	3	1	3	3	2
South Dakota	2	2	3	1	1	2	2	-
Tennessee	8	6	4	11	9	5	5	6
Texas	16	-	12	8	11	5	14	10
Utah	5	3	6	4	9	9	4	2
Vermont	4	2	2	3	5	3	-	3
Virginia	8	10	7	7	7	5	8	11
Washington	10	2	10	6	1	8	6	6
West Virginia	7	9	7	4	12	5	3	7
Wisconsin	17	13	12	18	17	12	10	10
Wyoming	-	-	1	1	1	1	3	1
TOTAL	448	378	390	359	381	334	318	342

NOTE: Silicosis = ICD-9 code 502.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- Indicates quantity zero.

Table 29. Industries with the highest proportions of workers potentially exposed to cotton dust, 1986

SIC	DESCRIPTION	Percent exposed (NOES)	Estimated workers exposed (1986)
225	Knitting mills	43.1	88,875
228	Yarn and thread mills	28.6	28,717
232	Men's, youths', and boys' furnishings, work clothing, and allied garments	25.7	72,129
221	Broad woven fabric mills, cotton	25.6	15,223
224	Narrow fabrics and other smallwares mills: cotton, wool, silk, and man-made fiber	18.0	3,278
233	Women's, misses', and juniors outerwear	12.8	41,968
239	Miscellaneous fabricated textile products	10.7	19,527
223	Broad woven fabric mills, wool (including dyeing and finishing)	7.0	799
283	Drugs	6.4	11,183
251	Household furniture	3.2	8,803

NOTE: Estimates of numbers of workers potentially exposed to cotton dust are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES).

Table 30. Industries with the largest numbers of workers potentially exposed to cotton dust, 1986

SIC	DESCRIPTION	Percent exposed (NOES)	Estimated workers exposed (1986)
225	Knitting mills	43.1	88,875
232	Men's, youths', and boys' furnishings, work clothing, and allied garments	25.7	72,129
233	Women's, misses', and juniors outerwear	12.8	41,968
228	Yarn and thread mills	28.6	28,717
239	Miscellaneous fabricated textile products	10.7	19,527
221	Broad woven fabric mills, cotton	25.6	15,223
283	Drugs	6.4	11,183
251	Household furniture	3.2	8,803
222	Broad woven fabric mills, man-made fiber, silk	3.1	3,468
224	Narrow fabrics and other smallwares mills: cotton, wool, silk, and man-made fiber	18.0	3,278

NOTE: Estimates of the numbers of workers potentially exposed to cotton dust are based on data from the 1986 County Business Patterns and the National Occupational Exposure Survey (NOES).

Table 31. Medicare hospitalizations with any mention of pneumonopathy due to inhalation of other dust, by state, from 1984 to 1989

State	Number of hospitalizations					
	1984	1985	1986	1987	1988	1989
Alabama	8	18	11	7	11	8
Alaska	-	-	-	6	-	-
Arizona	-	4	5	4	3	-
Arkansas	3	-	-	-	1	1
California	6	4	4	7	4	8
Colorado	2	-	1	5	6	3
Connecticut	-	-	-	-	-	3
Delaware	-	-	-	-	6	-
District of Columbia	1	-	-	-	-	-
Florida	3	4	1	-	4	1
Georgia	23	22	32	39	30	21
Hawaii	-	-	-	-	-	-
Idaho	-	-	-	-	-	-
Illinois	3	3	1	1	3	3
Indiana	-	4	-	6	1	1
Iowa	3	-	-	-	-	-
Kansas	-	-	-	2	3	-
Kentucky	-	1	1	-	-	-
Louisiana	3	-	1	2	3	3
Maine	1	-	5	3	-	1
Maryland	3	1	1	6	5	10
Massachusetts	1	5	6	2	3	3
Michigan	-	1	5	1	-	-
Minnesota	1	-	-	-	-	-
Mississippi	1	-	3	7	2	3
Missouri	1	-	-	-	-	-
Montana	3	-	1	-	-	3
Nebraska	-	-	-	-	3	-
Nevada	-	-	-	1	-	-
New Hampshire	1	3	-	-	1	-
New Jersey	3	2	-	4	-	1
New Mexico	-	-	-	-	-	3
New York	3	8	6	11	11	-
North Carolina	47	64	65	61	49	84
North Dakota	-	-	-	-	-	-
Ohio	10	1	1	2	4	-
Oklahoma	-	4	-	-	-	1
Oregon	-	-	1	1	-	1
Pennsylvania	11	12	8	6	6	-
Rhode Island	1	-	-	-	-	-
South Carolina	12	7	12	11	14	13
South Dakota	-	-	-	-	-	-
Tennessee	6	3	2	3	3	6
Texas	5	6	9	14	6	3
Utah	-	-	1	-	-	-
Vermont	-	-	-	-	3	-
Virginia	6	16	12	4	4	8
Washington	6	2	3	-	-	-
West Virginia	1	3	1	-	3	-
Wisconsin	1	-	1	1	7	1
Wyoming	-	-	-	-	-	-
TOTAL	182	198	202	217	199	193

NOTE: Pneumonopathy due to inhalation of other dust = IDC-9CM code 504 (includes bysinosis).

SOURCE: Medicare Provider Analysis and Review (MEDPAR), Office of Statistics and Data Management, Bureau of Data Management and Strategy, Health Care Financing Administration.

- indicates quantity zero.

Table 32. Byssinosis cases reported to state workers' compensation agencies, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama								
Alaska		-	-	-	-	-	-	-
Arizona	-	1	-	-	-	-	-	-
Arkansas	-	-	-	-	-	-	1	-
California	-	-	2	-	-	-	-	-
Colorado	-	-	-	-	-	-	-	-
Connecticut								
Delaware	-	-	-	-	-	-	-	-
District of Columbia								
Florida								
Georgia								
Hawaii	-	-	-	-	-	-	-	-
Idaho	-	-						
Illinois								
Indiana	-	-	-	-	-	-	-	-
Iowa	-	-	-	-	-	-	-	-
Kansas								
Kentucky	6	2	-	-	-	-	-	-
Louisiana						-	-	-
Maine								
Maryland	-	-	-	-	-	-	-	-
Massachusetts								
Michigan	-	-	-	-	-	-	-	-
Minnesota	-	-	-	-	-			
Mississippi	-	1	4	-	1	1	-	-
Missouri	-	-	-	-	-	-	-	-
Montana	-	-	-	-	-			
Nebraska	-	-	-	-	-	-	-	-
Nevada								
New Hampshire								
New Jersey	-							
New Mexico	-	-	-	-	-	-	-	-
New York	-	-	-	-	-	1	-	1
North Carolina	-	306	312	232	138	148	110	138
North Dakota								
Ohio	1	3	-	-	-	-	-	-
Oklahoma								
Oregon	-	-	-	-	-	-	-	-
Pennsylvania								
Rhode Island								
South Carolina								
South Dakota								
Tennessee	2	-	-	-	1	2	-	1
Texas								
Utah	-	-	-	-	-	-		
Vermont	-	-	-	-	-			
Virginia	2		-	3	-	-	-	-
Washington	-	-	-	-	-	-	-	-
West Virginia								
Wisconsin	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-

NOTE: Byssinosis = SDS code 284. Statistics for Arkansas, Delaware, New York, and North Carolina are for closed cases. Statistics for other states are for cases that occurred or were received during the year.

SOURCE: Bureau of Labor Statistics Supplementary Data Systems.

- indicates quantity zero. Empty space indicates information not available.

Table 33. Multiple cause of death listings with any mention of pneumonopathy due to inhalation of other dust (ICD-9 code 504) in United States residents age 15 and over, from 1979 to 1987

Year	Number of cases
1979	10
1980	9
1981	13
1982	4
1983	16
1984	18
1985	14
1986	16
1987	16

NOTE: Pneumonopathy due to inhalation of other dust = ICD-9 code 504. Examples of conditions listed under this code include byssinosis and flax-dressers' disease.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1979-87.

Table 34. Multiple cause of death listings with any mention of pneumonopathy due to inhalation of other dust (ICD-9 code 504) in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama.....	1	-	-	-	-	-	1	-
Alaska.....	-	-	-	-	-	-	-	-
Arizona.....	-	-	-	-	1	-	-	-
Arkansas.....	-	-	-	-	-	-	-	-
California.....	-	-	2	-	-	1	-	-
Colorado.....	-	-	-	-	-	-	-	-
Connecticut....	-	-	-	-	1	-	-	-
Delaware.....	-	-	-	-	-	-	-	-
District of Columbia.....	-	-	-	-	-	-	-	-
Florida.....	-	-	-	-	-	-	-	-
Georgia.....	-	2	-	3	5	1	2	4
Hawaii.....	-	-	-	-	-	-	-	-
Idaho.....	-	-	-	-	-	-	-	-
Illinois.....	1	-	-	-	-	-	1	-
Indiana.....	-	-	-	-	-	-	-	-
Iowa.....	-	-	-	-	-	-	-	-
Kansas.....	-	-	-	-	-	-	-	-
Kentucky.....	-	-	-	-	-	-	-	-
Louisiana.....	-	1	-	-	-	-	-	-
Maine.....	-	-	-	-	-	-	-	-
Maryland.....	-	-	-	-	-	-	1	-
Massachusetts..	1	-	1	2	-	1	-	-
Michigan.....	-	-	-	-	-	-	-	-
Minnesota.....	-	-	-	-	-	-	-	-
Mississippi....	-	-	-	-	-	-	-	-
Missouri.....	-	-	-	-	-	-	-	-
Montana.....	-	-	-	-	-	-	-	-
Nebraska.....	-	-	-	-	-	-	-	-
Nevada.....	-	-	-	-	-	-	-	-
New Hampshire..	-	-	-	-	1	-	-	-
New Jersey.....	-	-	1	-	-	1	-	-
New Mexico.....	-	-	-	-	-	-	-	-
New York.....	-	-	-	-	-	-	1	-
North Carolina.	3	7	-	7	4	7	7	9
North Dakota...	-	-	-	-	-	-	-	-
Ohio.....	-	-	-	-	-	-	-	-
Oklahoma.....	-	-	-	-	-	-	-	-
Oregon.....	-	-	-	-	-	-	-	-
Pennsylvania...	1	3	-	1	-	1	-	-
Rhode Island...	-	-	-	1	1	-	-	-
South Carolina.	1	-	-	2	4	-	1	1
South Dakota...	-	-	-	-	-	-	-	-
Tennessee.....	-	-	-	-	-	-	1	-
Texas.....	-	-	-	-	1	-	1	-
Utah.....	-	-	-	-	-	-	-	-
Vermont.....	-	-	-	-	-	1	-	1
Virginia.....	-	-	-	-	-	1	-	1
Washington.....	-	-	-	-	-	-	-	-
West Virginia..	1	-	-	-	-	-	-	-
Wisconsin.....	-	-	-	-	-	-	-	-
Wyoming.....	-	-	-	-	-	-	-	-
TOTAL.....	9	13	4	16	18	14	16	16

NOTE: Pneumonopathy due to inhalation of other dust = ICD-9 code 504. Examples of conditions listed under this code include byssinosis and flax-dressers' disease.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 35. Medicare hospitalizations with any mention of hypersensitivity pneumonitis, by state, from 1984 to 1989

State	Number of hospitalizations					
	1984	1985	1986	1987	1988	1989
Alabama	16	3	13	21	5	8
Alaska	-	-	1	-	1	1
Arizona	8	3	16	16	15	8
Arkansas	21	10	6	4	10	8
California	65	59	50	60	53	46
Colorado	9	16	8	12	10	10
Connecticut	27	16	27	4	14	12
Delaware	-	1	-	-	1	4
District of Columbia	3	3	-	3	-	4
Florida	39	43	30	26	41	30
Georgia	22	20	17	38	21	9
Hawaii	1	3	1	7	3	3
Idaho	8	4	5	8	4	3
Illinois	40	29	29	32	36	24
Indiana	26	28	22	18	20	25
Iowa	26	15	34	21	10	15
Kansas	19	19	17	6	25	12
Kentucky	17	19	15	20	10	19
Louisiana	14	15	8	12	12	7
Maine	13	13	13	12	4	8
Maryland	8	22	12	10	9	13
Massachusetts	26	35	18	12	18	15
Michigan	50	38	26	21	11	28
Minnesota	16	20	12	16	37	44
Mississippi	5	5	3	4	9	15
Missouri	48	24	23	15	26	18
Montana	9	2	6	4	7	8
Nebraska	15	7	6	7	9	7
Nevada	1	3	-	3	1	-
New Hampshire	3	1	4	6	5	6
New Jersey	20	22	20	23	14	34
New Mexico	2	6	10	3	4	-
New York	28	70	62	52	67	45
North Carolina	20	14	8	17	14	16
North Dakota	3	12	9	17	13	15
Ohio	30	10	36	24	38	44
Oklahoma	25	10	10	9	4	3
Oregon	6	6	4	11	8	7
Pennsylvania	29	44	39	47	29	40
Rhode Island	4	1	6	-	3	3
South Carolina	13	12	7	1	1	2
South Dakota	6	11	3	18	5	12
Tennessee	33	21	10	16	16	15
Texas	79	45	64	38	49	36
Utah	8	7	8	3	10	-
Vermont	1	-	5	-	15	-
Virginia	10	14	11	13	16	18
Washington	12	9	21	6	26	5
West Virginia	4	9	14	10	12	8
Wisconsin	80	53	24	54	43	61
Wyoming	1	2	-	1	2	-
TOTAL	973	856	795	786	819	781

NOTE: Hypersensitivity pneumonitis = ICD-9CM code 495 (extrinsic allergic alveolitis).

SOURCE: Medicare Provider Analysis and Review (MEDPAR), Office of Statistics and Data Management, Bureau of Data Management and Strategy, Health Care Financing Administration.

- indicates quantity zero.

Table 36. Medicare hospitalizations with any mention of farmers' lung, by state, from 1984 to 1989

State	Number of hospitalizations					
	1984	1985	1986	1987	1988	1989
Alabama	1	-	3	6	-	-
Alaska	-	-	-	-	-	-
Arizona	-	-	6	1	1	-
Arkansas	3	-	-	1	1	-
California	2	-	1	-	2	4
Colorado	-	2	1	3	1	-
Connecticut	-	1	-	-	1	-
Delaware	-	-	-	-	-	-
District of Columbia	-	-	-	-	-	-
Florida	4	4	3	1	6	1
Georgia	-	2	1	2	-	1
Hawaii	-	-	-	-	-	-
Idaho	-	-	-	5	-	1
Illinois	7	2	7	2	14	3
Indiana	2	1	12	10	10	4
Iowa	15	4	16	14	3	8
Kansas	4	6	3	3	13	1
Kentucky	1	1	1	3	-	4
Louisiana	-	3	-	1	1	-
Maine	-	3	3	-	-	-
Maryland	1	3	1	-	-	-
Massachusetts	4	5	1	1	1	-
Michigan	8	6	3	3	-	1
Minnesota	6	9	4	8	22	25
Mississippi	1	-	-	-	-	-
Missouri	6	3	3	1	4	2
Montana	4	-	-	-	3	1
Nebraska	1	-	2	2	2	1
Nevada	-	-	-	-	-	-
New Hampshire	-	-	-	2	2	3
New Jersey	1	5	1	8	1	9
New Mexico	-	1	-	-	2	-
New York	4	13	12	11	30	13
North Carolina	3	-	-	6	-	1
North Dakota	-	7	6	4	7	3
Ohio	10	2	7	7	9	8
Oklahoma	6	5	5	3	-	-
Oregon	-	-	1	-	-	-
Pennsylvania	4	10	6	14	5	15
Rhode Island	-	-	-	-	-	-
South Carolina	3	-	3	-	-	-
South Dakota	4	9	2	13	4	8
Tennessee	1	1	-	1	-	1
Texas	6	3	6	6	10	3
Utah	1	-	1	-	2	-
Vermont	-	-	3	-	9	-
Virginia	-	1	1	1	3	3
Washington	-	2	9	-	4	1
West Virginia	1	4	5	7	4	4
Wisconsin	52	23	13	35	23	37
Wyoming	-	1	-	-	-	-
TOTAL	166	142	152	186	200	166

NOTE: Farmers' lung = ICD-9CM code 495.0.

SOURCE: Medicare Provider Analysis and Review (MEDPAR), Office of Statistics and Data Management, Bureau of Data Management and Strategy, Health Care Financing Administration.

- indicates quantity zero.

Table 37. Multiple cause of death listings with any mention of hypersensitivity pneumonitis in United States residents age 15 and over, from 1979 to 1987

Year	Number of cases
1979	15
1980	15
1981	12
1982	15
1983	20
1984	36
1985	35
1986	24
1987	26

NOTE: Hypersensitivity pneumonitis = ICD-9 code 495 (extrinsic allergic alveolitis).

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1979-87.

Table 38. Multiple cause of death listings with any mention of hypersensitivity pneumonitis in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama	-	-	-	-	-	-	1	-
Alaska	-	-	-	-	-	-	-	-
Arizona	-	-	-	-	-	2	-	1
Arkansas	-	-	-	-	1	-	-	-
California	-	-	-	1	7	1	2	4
Colorado	-	-	-	1	-	-	-	1
Connecticut	1	-	1	1	-	2	1	-
Delaware	-	-	-	-	-	-	-	-
District of Columbia	-	-	-	-	-	-	-	-
Florida	1	2	-	1	1	-	3	-
Georgia	-	-	-	-	-	-	1	-
Hawaii	-	-	-	-	-	-	-	-
Idaho	-	-	-	1	-	-	-	-
Illinois	-	-	-	3	-	1	1	-
Indiana	-	2	-	-	-	1	-	1
Iowa	-	-	-	-	2	2	-	1
Kansas	-	-	1	-	1	-	-	-
Kentucky	-	-	-	-	-	-	-	-
Louisiana	-	-	-	-	-	1	-	-
Maine	-	-	-	-	1	-	-	-
Maryland	-	-	-	-	-	2	-	1
Massachusetts	-	-	-	-	1	-	-	1
Michigan	1	1	2	-	3	2	-	-
Minnesota	-	2	-	1	4	2	-	1
Mississippi	-	-	-	-	-	-	-	-
Missouri	1	-	-	-	-	1	-	-
Montana	-	-	-	-	-	-	1	-
Nebraska	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-
New Hampshire	-	-	-	-	-	-	-	-
New Jersey	1	-	-	-	-	-	-	1
New Mexico	-	-	-	-	-	-	-	-
New York	2	1	-	-	-	2	-	3
North Carolina	-	1	-	-	-	-	-	-
North Dakota	-	-	-	-	-	-	-	-
Ohio	1	-	-	-	1	-	-	-
Oklahoma	-	-	-	-	-	-	-	-
Oregon	-	-	-	-	-	-	-	1
Pennsylvania	-	1	2	2	4	2	-	-
Rhode Island	-	-	-	-	1	-	-	1
South Carolina	-	-	-	-	-	-	-	1
South Dakota	-	-	-	1	2	-	1	1
Tennessee	1	-	-	1	-	1	1	-
Texas	1	-	2	2	1	2	1	-
Utah	-	-	-	-	-	-	-	-
Vermont	-	-	2	-	-	-	-	-
Virginia	1	-	1	-	1	2	3	1
Washington	-	-	2	-	-	2	1	-
West Virginia	-	-	-	1	-	-	-	2
Wisconsin	4	2	2	3	4	7	7	4
Wyoming	-	-	-	1	1	-	-	-
TOTAL	15	12	15	20	36	35	24	26

NOTE: Hypersensitivity pneumonitis = ICD-9 code 495 (extrinsic allergic alveolitis).

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 39. Number of reported occupational respiratory conditions due to toxic agents by industry division for the United States, private sector, from 1973 to 1988

Year	Total	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1973....	11,500	100	-	1,000	7,300	700	1,100	100	1,100
1974....	12,700	200	100	900	8,500	700	1,200	100	1,000
1975....	11,900	200	100	900	7,100	900	1,400	300	1,100
1976....	13,100	200	100	1,100	7,700	1,100	1,000	200	1,600
1977....	13,100	100	-	1,100	7,500	1,100	1,400	100	1,700
1978....	13,600	100	100	1,100	7,900	1,100	1,600	200	1,600
1979....	13,100	100	100	1,100	7,800	900	1,300	200	1,700
1980....	11,400	100	100	700	6,700	1,000	1,300	100	1,300
1981....	10,800	100	100	1,000	5,900	800	1,100	100	1,600
1982....	8,800	100	100	600	4,700	700	700	100	1,600
1983....	7,900	100	100	700	4,000	600	700	100	1,700
1984....	10,600	100	100	700	5,500	700	1,200	200	2,100
1985....	11,600	200	100	800	6,000	900	1,400	400	1,800
1986....	12,300	100	-	600	6,400	700	1,600	400	2,400
1987....	14,300	700	-	700	7,500	900	1,700	400	2,400
1988....	16,100	200	100	900	9,200	1,000	1,300	500	3,000

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

- indicates quantity zero.

Table 40. Rate per 10,000 full-time workers of reported occupational respiratory conditions due to toxic agents by industry division for the United States, private sector, from 1973 to 1988

Year	Overview	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1973.....	2.1	1.8	1.7	3.2	3.8	1.7	0.8	0.2	1.2
1974.....	2.2	2.4	0.9	3.0	4.4	1.6	0.8	0.2	0.9
1975.....	2.2	1.7	0.8	3.1	4.1	2.1	1.0	0.7	1.1
1976.....	2.3	3.1	1.6	3.7	4.3	2.6	0.7	0.5	1.5
1977.....	2.2	2.0	0.5	3.3	4.0	2.5	0.9	0.2	1.4
1978.....	2.2	2.2	0.8	2.9	4.0	2.4	1.0	0.6	1.3
1979.....	2.0	1.1	0.8	2.8	3.9	1.9	0.8	0.5	1.3
1980.....	1.8	2.0	0.8	2.0	3.5	2.0	0.8	0.2	1.0
1981.....	1.7	1.1	1.0	2.9	3.1	1.7	0.7	0.2	1.1
1982.....	1.4	1.7	0.5	1.9	2.7	1.5	0.5	0.3	1.1
1983.....	1.2	1.4	0.8	2.0	2.3	1.4	0.4	0.2	1.1
1984.....	1.6	1.5	0.9	1.8	2.9	1.4	0.7	0.5	1.3
1985.....	1.7	2.4	1.0	1.9	3.2	1.8	0.8	0.8	1.1
1986.....	1.7	1.3	-	1.5	3.5	1.5	0.9	0.6	1.4
1987.....	2.0	7.9	0.6	1.6	4.0	1.7	0.9	0.7	1.3
1988.....	2.2	2.1	0.7	2.0	4.9	1.9	0.6	0.9	1.6

SOURCE: Bureau of Labor Statistics annual reports of occupational injury and illnesses.

Table 41. Cases of toxic lower respiratory conditions reported to state workers' compensation agencies, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama								
Alaska	7	26	14	14	21	33	32	20
Arizona	14	8	4	11	14	13	13	3
Arkansas	10	2	2	8	6	24	17	13
California	1,112	1,396	1,156	1,404	1,436	1,311	1,469	1,358
Colorado	54	43	32	48	60	91	80	68
Connecticut								
Delaware	1	2	1	1	1	-	2	-
District of Columbia								
Florida								
Georgia								
Hawaii	12	19	10	19	18	34	19	30
Idaho	-	-						
Illinois								
Indiana	28	26	47	37	58	90	69	98
Iowa	16	39	68	62	12	20	25	26
Kansas								
Kentucky	71	55	50	62	33	20	33	38
Louisiana						-	2	5
Maine	42	43	30	35				32
Maryland	9	5	7	2	8	-	2	1
Massachusetts	4							
Michigan	31	46	34	51	66	42	20	27
Minnesota	18	54	48	22	24			
Mississippi	15	5	9	11	12	15	16	19
Missouri	32	16	8	2	13	15	21	43
Montana	-	-	2	-	-			
Nebraska	8	18	16	9	30	10	14	41
Nevada								
New Hampshire								
New Jersey	33							
New Mexico	-	-	-	-	-	-	-	-
New York	120	87	73	66	61	93	89	90
North Carolina	51	2	4	3	-	3	2	3
North Dakota								
Ohio	148	118	120	149	156	183	187	150
Oklahoma								7
Oregon	42	20	36	21	30	50	45	54
Pennsylvania								
Rhode Island								
South Carolina								
South Dakota								
Tennessee	15	17	7	14	8	20	19	27
Texas								
Utah	2	7	5	5	7	7		
Vermont		4	1	-	-			
Virginia	3		15	12	9	-	2	-
Washington	361	341	262	160	168	136	48	44
West Virginia								
Wisconsin	25	16	36	39	45	31	43	38
Wyoming	-	2	5	2	-	-	-	6

NOTE: Toxic lower respiratory conditions = SDS code 274. Statistics for Arkansas, Delaware, New York, and North Carolina are for closed cases. Statistics for other states are for cases that occurred or were received during the year.

SOURCE: Bureau of Labor Statistics Supplementary Data System.

- indicates quantity zero. Empty space indicates information not available.

Table 42. Industries with the highest incidence rates of reported occupational respiratory conditions due to toxic agents, private sector, 1988

Industry	SIC code	Rates per 10,000 full time workers
Miscellaneous petroleum and coal products	299	130.8
Primary nonferrous metals	333	29.8
Ship and boat building and repair	373	22.1
Flat glass	321	17.7
Metal services not elsewhere classified	347	16.4
Pens, pencils, office and art supplies	395	15.2
Engineering and scientific instruments	381	15.1
Paperboard mills	263	11.2
Boot and shoe cut stocks and findings	313	10.1
Preserved fruits and vegetables	203	10.1

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 43. Multiple cause of death listings with any mention of respiratory conditions due to chemical fumes and vapors in United States residents age 15 and over, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama	-	-	-	-	-	-	-	1
Alaska	2	-	5	-	-	-	-	-
Arizona	2	2	-	1	-	-	-	-
Arkansas	-	-	-	-	-	1	1	2
California	6	6	4	8	4	4	3	1
Colorado	-	1	1	-	-	-	-	1
Connecticut	-	-	-	-	-	-	-	-
Delaware	-	-	-	-	-	-	-	-
District of Columbia	-	-	-	-	-	-	-	-
Florida	-	2	2	7	1	1	-	4
Georgia	1	4	-	2	1	1	3	2
Hawaii	-	-	1	-	-	-	-	-
Idaho	-	-	-	-	-	1	-	-
Illinois	3	6	-	2	3	1	2	1
Indiana	1	-	-	2	-	2	2	-
Iowa	1	2	2	-	1	-	-	-
Kansas	1	-	1	-	-	-	2	-
Kentucky	-	4	2	-	-	-	-	1
Louisiana	-	-	2	-	-	-	1	1
Maine	-	-	-	-	1	-	-	-
Maryland	1	-	-	-	-	-	-	-
Massachusetts	2	2	-	-	-	-	1	-
Michigan	7	-	2	3	-	2	2	1
Minnesota	-	-	3	2	1	4	-	-
Mississippi	1	-	-	1	1	2	3	-
Missouri	-	4	-	2	2	-	2	-
Montana	1	2	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	1	-
Nevada	-	-	-	-	-	-	1	-
New Hampshire	-	-	-	-	-	1	-	-
New Jersey	1	2	2	-	1	1	1	-
New Mexico	-	-	-	-	-	-	-	-
New York	2	8	4	2	3	8	3	1
North Carolina	1	1	1	1	1	1	1	-
North Dakota	-	-	-	-	-	-	-	-
Ohio	3	2	4	3	2	3	4	3
Oklahoma	1	-	2	1	-	-	-	-
Oregon	-	1	-	-	1	-	1	1
Pennsylvania	4	9	5	1	-	1	1	-
Rhode Island	-	2	2	-	-	-	-	-
South Carolina	1	1	1	1	-	-	2	-
South Dakota	1	-	-	-	-	-	-	-
Tennessee	1	-	-	-	-	1	-	1
Texas	4	2	2	2	3	3	4	-
Utah	-	-	-	-	-	-	-	-
Vermont	-	-	1	1	-	-	-	-
Virginia	3	2	1	2	-	-	1	1
Washington	2	-	2	1	1	1	-	2
West Virginia	-	2	-	-	-	-	-	-
Wisconsin	-	-	1	-	-	-	3	1
Wyoming	-	-	-	-	-	-	-	-
TOTAL	53	67	53	45	27	39	45	25

NOTE: Respiratory conditions due to chemical fumes and vapors = ICD-9 code 506.

SOURCE: Tabulations are based on National Center for Health Statistics multiple cause of death data tapes, 1980-87.

- indicates quantity zero.

Table 44. Number of reported occupational illnesses by type of illness for the United States, private sector, from 1973 to 1988

Year	Total	Skin diseases or disorders	Dust diseases of the lungs	Respiratory conditions due to toxic agents	Poisoning	Disorders due to physical agents	Associated with repeated trauma	All other occupational illness
1973.....	200,500	89,200	1,500	11,500	6,800	27,500	23,600	40,400
1974.....	200,400	89,400	1,700	12,700	7,400	27,100	24,600	37,400
1975.....	163,300	74,400	1,000	11,900	6,200	21,200	23,700	24,900
1976.....	167,900	71,600	1,200	13,100	6,100	24,200	23,000	28,800
1977.....	161,900	73,000	2,000	13,100	5,700	23,600	23,400	21,100
1978.....	143,500	65,900	1,600	13,600	5,600	16,700	20,200	19,600
1979.....	148,900	67,900	1,700	13,100	5,800	15,100	21,900	23,200
1980.....	130,200	56,100	2,300	11,400	4,700	13,200	23,100	19,200
1981.....	126,100	51,200	2,100	10,800	5,600	11,900	22,900	21,500
1982.....	105,600	41,900	2,000	8,800	3,400	8,300	22,600	18,600
1983.....	106,100	39,500	1,700	7,900	3,000	8,800	26,700	18,400
1984.....	124,800	42,500	1,800	10,600	4,500	9,000	34,700	21,400
1985.....	125,400	41,800	1,700	11,600	4,200	9,000	37,000	20,100
1986.....	136,800	41,900	3,200	12,300	4,300	9,200	46,000	20,400
1987.....	190,200	54,200	3,400	14,300	4,800	13,800	72,900	26,800
1988.....	240,700	57,900	2,900	16,100	5,500	17,300	115,400	25,600

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 45. Percent of reported occupational illnesses by type of illness for the United States, private sector, from 1973 to 1988

Year	Private sector	Skin diseases or disorders	Dust diseases of the lungs	Respiratory conditions due to toxic agents	Poisoning	Disorders due to physical agents	Associated with repeated trauma	All other occupational illness
1973.....	100.0	44.5	0.7	5.7	3.4	13.7	11.8	20.1
1974.....	100.0	44.6	0.8	6.3	3.7	13.5	12.3	18.7
1975.....	100.0	45.6	0.6	7.3	3.8	13.0	14.5	15.2
1976.....	100.0	42.6	0.7	7.8	3.6	14.4	13.7	17.2
1977.....	100.0	45.1	1.2	8.1	3.5	14.6	14.5	13.0
1978.....	100.0	45.9	1.1	9.5	3.9	11.6	14.1	13.7
1979.....	100.0	45.6	1.1	8.8	3.9	10.1	14.7	15.6
1980.....	100.0	43.1	1.8	8.8	3.6	10.1	17.7	14.7
1981.....	100.0	40.6	1.7	8.6	4.4	9.4	18.2	17.0
1982.....	100.0	39.7	1.9	8.3	3.2	7.9	21.4	17.6
1983.....	100.0	37.2	1.6	7.4	2.8	8.3	25.2	17.3
1984.....	100.0	34.1	1.4	8.5	3.6	7.2	27.8	17.1
1985.....	100.0	33.3	1.4	9.3	3.3	7.2	29.5	16.0
1986.....	100.0	30.6	2.3	9.0	3.1	6.7	33.6	14.9
1987.....	100.0	28.5	1.8	7.5	2.5	7.3	38.3	14.1
1988.....	100.0	24.1	1.2	6.7	2.3	7.2	47.9	10.6

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 46. Industries with the largest incidence rates of reported occupational illnesses, private sector, 1988

Industry	SIC code	Rate per 10,000 full-time workers
Meat products	201	570.4
Motor vehicles and equipment	371	374.1
Plumbing & heating products (except electrical)	343	302.3
Ship and boating building and repairs	373	291.7
Household appliances	363	268.4
Primary nonferrous metals	333	263.5
Leather tanning and finishing	311	242.6
Misc. electrical equipment and supplies	369	224.6
Rubber and plastic footwear	302	196.3
Flat glass	321	192.2

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 47. Rate per 10,000 full-time workers of reported occupational illnesses by industry division for the United States, private sector, from 1973 to 1988

Year	Overall	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1973....	36.4	75.6	16.5	42.3	61.0	27.9	16.4	8.2	26.0
1974....	35.2	70.8	12.6	39.5	62.3	24.1	15.4	7.5	23.9
1975....	29.8	56.2	12.5	34.7	54.9	20.9	12.1	4.6	22.4
1976....	29.9	80.4	9.6	39.8	53.5	19.9	11.1	6.8	23.8
1977....	27.6	74.1	13.2	30.6	51.3	20.4	10.3	5.7	19.4
1978....	23.3	58.6	18.5	21.7	44.4	17.2	9.5	4.6	15.6
1979....	23.1	56.9	16.4	22.6	43.3	17.3	9.6	4.6	16.7
1980....	20.3	59.3	14.1	20.9	39.4	16.7	7.5	3.2	13.9
1981....	19.4	54.7	15.9	22.1	36.2	14.7	7.6	3.3	15.0
1982....	16.8	49.6	13.1	16.5	33.5	12.2	6.3	3.2	12.8
1983....	16.7	46.9	10.0	16.2	33.8	10.8	5.7	3.4	13.7
1984....	18.4	44.0	13.0	16.3	38.6	11.9	6.5	3.7	14.1
1985....	18.1	41.6	17.2	16.4	38.7	11.8	6.3	5.1	13.3
1986....	19.2	48.1	21.0	13.7	45.6	11.1	6.3	4.7	12.5
1987....	26.1	51.7	30.1	16.2	67.6	13.2	7.5	5.3	14.7
1988....	32.2	48.8	26.2	15.3	93.6	17.3	7.8	5.3	12.2

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 48. Number of reported occupational injuries and illnesses by industry division for the United States, private sector, from 1980 to 1987 (in thousands)

Year	Total	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1980....	5,606	84	115	588	2,354	453	1,211	90	712
1981....	5,404	90	134	538	2,209	439	1,191	90	714
1982....	4,856	87	111	479	1,814	404	1,156	95	711
1983....	4,854	88	79	495	1,773	379	1,186	95	759
1984....	5,420	94	94	582	1,989	428	1,315	99	821
1985....	5,507	92	78	613	1,938	423	1,357	104	904
1986....	5,629	90	57	647	1,949	406	1,437	115	932
1987....	6,036	100	62	638	2,213	429	1,471	115	1,009

NOTE: Because of rounding, components may not add to totals.

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 49. Number of reported occupational illnesses by industry division for the United States, private sector, from 1973 to 1988

Year	Total	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1973.....	200,500	5,900	500	13,400	117,800	12,200	22,600	3,000	25,100
1974.....	200,400	6,900	800	12,100	119,900	10,900	22,100	2,800	25,000
1975.....	163,300	5,400	900	10,100	95,300	8,800	17,100	1,700	24,000
1976.....	167,900	5,000	700	12,100	96,600	8,500	16,200	2,500	26,400
1977.....	161,900	4,800	1,100	10,000	96,300	9,100	15,700	2,300	22,700
1978.....	143,500	3,400	1,600	7,800	86,700	7,900	15,000	1,900	19,200
1979.....	148,900	3,200	1,600	8,700	87,400	8,400	15,800	2,000	21,900
1980.....	130,200	4,200	1,500	7,800	76,100	8,000	12,200	1,500	19,000
1981.....	126,100	4,000	1,800	7,800	69,600	7,100	12,500	1,600	21,500
1982.....	105,600	3,700	1,400	5,400	59,300	5,800	10,200	1,500	18,400
1983.....	106,100	3,500	1,000	5,400	59,800	5,000	9,300	1,600	20,500
1984.....	124,800	3,400	1,300	6,100	72,400	5,800	11,600	1,900	22,400
1985.....	125,400	3,400	1,000	6,600	72,200	5,800	11,400	2,700	22,300
1986.....	136,800	3,900	1,600	5,800	83,600	5,400	11,800	2,600	22,000
1987.....	190,200	4,600	2,200	7,000	125,200	6,700	14,300	3,100	27,100
1988.....	240,700	4,600	1,900	6,900	178,600	9,000	15,300	3,100	23,300

NOTE: Because of rounding, components may not add to totals.

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 50. Number of cases of reported occupational dust diseases of the lungs by industry division for the United States, private sector, from 1973 to 1988

Year	Total	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1973....	1,500	100	-	100	700	200	200	-	100
1974....	1,700	100	300	100	900	-	300	-	100
1975....	1,000	-	-	200	600	-	100	-	-
1976....	1,200	-	-	200	800	100	-	-	-
1977....	2,000	100	200	800	700	100	100	100	100
1978....	1,600	-	300	200	800	100	200	-	100
1979....	1,700	-	300	200	900	100	100	-	100
1980....	2,300	-	300	200	1,300	100	100	-	200
1981....	2,100	-	300	200	1,500	-	-	-	100
1982....	2,000	-	300	100	1,200	100	100	-	100
1983....	1,700	-	200	100	900	-	200	-	200
1984....	1,800	-	200	200	1,000	100	100	-	100
1985....	1,700	-	200	100	800	100	200	-	200
1986....	3,200	100	600	100	-	-	-	100	300
1987....	3,400	-	900	500	1,200	200	-	-	400
1988....	2,900	-	700	200	1,200	300	-	-	300

NOTE: Because of rounding, components may not add to totals.

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

- indicates quantity zero.

Table 51. Rate per 10,000 full-time workers of reported occupational dust diseases of the lungs by industry division for the United States, private sector, from 1973 to 1988

Year	Total	Agri-culture	Mining	Construction	Manufac-turing	Trans-portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1973.....	0.3	1.3	0.5	0.4	0.4	0.3	0.2	0.1	0.1
1974.....	0.3	0.8	4.8	0.3	0.4	-	0.2	0.0	0.1
1975.....	0.2	0.4	0.2	0.6	0.4	0.1	-	-	-
1976.....	0.2	0.2	0.1	0.5	0.4	0.2	-	-	-
1977.....	0.3	1.3	2.0	2.5	0.4	0.1	-	0.1	0.1
1978.....	0.3	0.3	4.0	0.6	0.4	0.1	0.1	-	-
1979.....	0.3	0.1	3.4	0.5	0.4	0.1	0.1	-	0.1
1980.....	0.4	0.4	3.3	0.6	0.7	0.1	0.1	-	0.1
1981.....	0.3	0.3	2.5	0.5	0.8	0.1	-	-	0.1
1982.....	0.3	0.4	3.2	0.3	0.7	0.2	0.1	-	0.1
1983.....	0.3	0.3	1.9	0.4	0.5	0.1	0.1	-	0.1
1984.....	0.3	0.4	1.7	0.5	0.5	0.2	0.1	-	0.1
1985.....	0.2	0.5	2.7	0.3	0.4	0.2	0.1	-	0.1
1986.....	0.5	1.0	8.4	0.3	0.9	-	-	-	0.1
1987.....	0.5	0.5	12.9	1.2	0.8	0.3	-	-	0.2
1988.....	0.4	-	10.2	0.5	0.6	0.6	-	-	0.1

NOTE: Because of rounding, components may not add to totals.

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

- indicates quantity zero.

Table 52. Industries with the highest incidence rates of reported occupational dust diseases of the lungs, private sector, 1988

Industry	SIC code	Rates per 10,000 full time workers
Bituminous mining	12	49.4
Anthracite mining	11	33.6
Ship and boat building and repair	373	8.1
Plastic materials and synthetics	282	5.1
Boot and shoe cut stock and findings	313	3.4
Miscellaneous wood products	249	3.2
Ordnance and accessories, not elsewhere classified	348	2.6
Miscellaneous special trade contractors	179	2.6
Textile mill products	22	2.5
Industrial organic chemical	286	2.4

SOURCE: Bureau of Labor Statistics annual reports of occupational injuries and illnesses.

Table 53. Number of occupational respiratory illnesses reported by mine operators, from 1980 to 1988

Year	Bituminous coal and lignite	Anthracite coal	Metallic minerals	Stone	Sand and gravel	Nonmetallic minerals
1980.....	313	-	8	11	-	6
1981.....	272	-	8	5	-	2
1982.....	330	-	19	2	-	3
1983.....	164	-	11	2	-	1
1984.....	157	2	5	2	-	9
1985.....	272	41	6	1	-	4
1986.....	634	17	10	5	-	1
1987.....	968	24	29	13	1	4
1988.....	726	6	7	11	-	3
Estimated number of workers in 1987	148,515	2,841	42,210	68,645	35,229	27,846

NOTE: Non-metallic minerals excludes coal, stone, and sand and gravel. Estimated number of workers excludes office workers.

SOURCE: Mine Safety and Health Administration annual reports on injury experience.

- indicates no cases reported or data do not meet publication guidelines.

Table 54. Number of dust samples collected by the Mine Safety and Health Administration (MSHA) or Occupational Safety and Health Administration (OSHA) inspectors for selected occupational respiratory hazards and the percents of these samples that exceed various levels, from 1984 to 1988

Type of Sample	Agency	Total # samples N	Samples < level N (%)	Samples 1-2x level N (%)	Samples > 2x level N (%)	Samples collected on complaint inspections N (%)
Coal mine dust						
Surface mines.....	MSHA	37,504	35,647(95)	1,421(4)	436(1)	
Underground mines....	MSHA	78,804	68,426(87)	8,415(11)	1,963(2)	
Quartz dust						
Coal mining.....	MSHA	18,051	12,977(72)	2,891(16)	2,183(12)	
Metal/Non-metal mining.....	MSHA	17,150	13,571(79)	2,179(13)	1,400(8)	
General industry.....	OSHA	2,957	1,811(61)	541(18)	605(21)	783(26)
Asbestos Fiber						
Metal/Non-metal mining.....	MSHA	214	211(99)	2(1)	1(0)	
General industry.....	OSHA					
Level= 2 f/cc		1,596	1,380(87)	114(7)	102(6)	621(39)
Level=.2 f/cc		1,596	1,053(66)	171(11)	372(23)	621(39)
Cotton dust						
General industry.....	OSHA					
Level=200 ug/m^3		173	87(50)	58(34)	28(16)	23(13)
Level=500 ug/m^3		14	9(64)	5(36)	0(0)	5(36)
Level=750 ug/m^3		18	16(89)	2(11)	0(0)	0(0)
• Level=1 mg/m^3		13	8(62)	0(0)	5(38)	3(23)

NOTE: OSHA = Occupational Safety and Health Administration.
MSHA = Mine Safety and Health Administration.

Levels are defined as follows:

- Coal Mine Dust Level = 2 mg/m^3 MRE for MSHA coal mine dust sample (level not reduced by quartz content).
- Quartz Dust Level = 0.10 mg/m^3 MRE for MSHA coal mine quartz dust sample (2 lpm flourate).
  = 10 mg/m^3 divided by (% quartz ÷ 2) for MSHA metal/non-metal mine quartz dust sample and OSHA quartz dust sample (1.7 lpm flowrate).
- Asbestos Fiber Level = 2 fiber/cc (8 hours) and 10 fiber/cc (1 hour) for MSHA metal/non-metal mine asbestos sample.
  = 2 fiber/cc for OSHA asbestos sample (1984-June 20, 1986).
  = .2 fiber/cc for OSHA asbestos sample (June 20, 1986-1988).
- Cotton Dust Level = 200 ug/m^3, lint-free respirable cotton dust in yarn manufacturing and cotton washing operations; 500 ug/m^3, 8 hour TWA, lint-free respirable cotton dust in textile mill waste house operations or lower grade washed cotton in yarn manufacturing; 750 ug/m^3, lint-free respirable cotton dust in slashing and weaving processes; and 1 mg/m^3, in cotton waste processing operations of waste, recycling (sorting, blending, cleaning, and willowing) and garnetting.

SOURCE: Tabulations by Environmental Investigations Branch, DRDS, NIOSH from data tapes provided by OSHA and MSHA.

Empty Space indicates data not available.

Table 55. Number of dust samples collected by the Mine Safety and Health Administration (MSHA) or Occupational Safety and Health Administration (OSHA) inspectors for selected occupational respiratory hazards and the percents of these samples that exceed various levels, 1988

Type of Sample	Agency	Total # samples N	Samples < level N (%)	Samples 1-2x level N (%)	Samples > 2x level N (%)	Samples collected on complaint inspections N (%)
Coal mine dust						
Surface mines.....	MSHA	6,988	6,599(95)	293(4)	96(1)	
Underground mines...	MSHA	14,857	12,985(88)	1,545(10)	327(2)	
Quartz dust						
Coal mining.....	MSHA	3,554	2,597(73)	534(15)	423(12)	
Metal/Non-metal mining.....	MSHA	3,855	2,657(69)	708(18)	490(13)	
General industry....	OSHA	442	263(59)	88(20)	91(21)	176(40)
Asbestos Fiber						
Metal/non-metal mining.....	MSHA	46	46(100)	0(0)	0(0)	
General industry....	OSHA	225	184(82)	16(7)	25(11)	96(43)
Cotton dust						
General industry....	OSHA					
Level=200 ug/m^3		35	25(71)	4(12)	6(17)	20(57)
Level=750 ug/m^3		2	2(100)	0(0)	0(0)	0(0)

NOTE: OSHA = Occupational Safety and Health Administration.
MSHA = Mine Safety and Health Administration.

Levels are defined as follows:

- Coal Mine Dust Level = 2 mg/m^3 MRE for MSHA coal mine dust sample (level not reduced by quartz content).
- Quartz Dust Level = 0.10 mg/m^3 MRE for MSHA coal mine quartz dust sample (2 lpm flowrate).
  = 10 mg/m^3 divided by (% quartz + 2) for MSHA metal/non-metal mine quartz dust sample and OSHA quartz dust sample (1.7 lpm flowrate).
- Asbestos Fiber Level = 2 fiber/cc (8 hours) and 10 fiber/cc (1 hour) for MSHA metal/non-metal mine asbestos sample (fibers > 5 μm long).
  = .2 fiber/cc for OSHA asbestos sample (June 20, 1986-1988).
- Cotton Dust Level = 200 ug/m^3, lint-free respirable cotton dust in yarn manufacturing and cotton washing operations; 500 ug/m^3, 8 hour TWA, lint-free respirable cotton dust in textile mill waste house operations or lower grade washed cotton in yarn manufacturing; 750 ug/m^3, lint-free respirable cotton dust in slashing and weaving processes; and 1 mg/m^3, in cotton waste processing operations of waste, recycling (sorting, blending, cleaning, and willowing) and garnetting.

SURCE: Tabulations by Environmental Investigations Branch, DRDS, NIOSH from data tapes provided by OSHA and MSHA.

Empty Space indicates data not available.

Table 56. Old Age, Survivors, Disability Insurance (OASDI) Awards for disabled workers with a respiratory diagnosis, by major industry group, from 1981 to 1987

Year	Total	Agri-culture	Mining	Construction	Manufac-turing	Trans portation & Public Utilities	Wholesale & Retail Trade	Finance	Services
1981....	21,520	889	794	2,015	5,098	1,316	2,252	385	3,325
1982....	19,766	615	586	2,160	4,692	1,351	1,966	350	3,077
1983....	17,978	668	510	1,749	3,799	1,127	1,470	257	2,837
1985....	20,213	553	327	1,150	2,595	712	1,281	236	2,187
1986....	23,449	909	617	1,573	5,661	1,874	2,933	680	4,965
1987....	22,978	2,844	578	1,205	4,949	1,800	2,555	450	5,045

NOTE: Data for 1984 is not available. Because of rounding components may not add to total.

SOURCE: Social Security Bulletin, Annual Statistical Supplements.

Table 57. Number of Black Lung beneficiaries and payments by the Social Security Administration and Department of Labor, from 1980 to 1987

Year	Social Security Administration		Department of Labor	
	Total beneficiaries	Annual amount (dollars)	Total beneficiaries	Total amount (dollars)
1980	399,477	1,032,000,000	139,073	813,205,000
1981	376,505	1,081,300,000	163,401	805,627,000
1982	354,569	1,026,000,000	173,972	784,085,000
1983	333,358	1,055,800,000	166,043	859,855,000
1984	313,822	1,038,000,000	163,166	873,923,000
1985	294,846	1,025,000,000	160,437	905,516,000
1986	275,783	971,000,000	156,550	629,075,000
1987	258,988	940,000,000	153,289	655,290,000

NOTE: The Social Security Administration (SSA) was assigned initial responsibility for administering the Black Lung benefits program. The Department of Labor (DOL) assumed responsibility for processing and paying claims on July 1, 1973. Most claims filed prior to July 1, 1973 remain within the jurisdiction of SSA, which also continues to be responsible for processing and paying claims filed by the survivors of these miners.

SOURCE: Social Security Bulletin Annual Statistical Supplement 1989 and Black Lung Benefits Act Annual Report on Administration of the Act.

Table 58. Indemnity compensation for selected occupational respiratory conditions, reported by eight state workers' compensation agencies, 1986

SDS Code	Condition	Number of Cases	Indemnity Compensation	
			Total Compensation (dollars)	Average Compensation (dollars)
274	Toxic lower respiratory conditions	278	5,609,400	20,178
283	Asbestosis	71	5,084,250	71,609
284	Byssinosis	111	2,368,422	21,337
286	Silicosis	50	3,078,283	61,566
572	Non-toxic lower respiratory conditions	136	1,872,028	13,765

NOTE: The eight states providing indemnity compensation information were: Arkansas, Delaware, Iowa, New York, North Carolina, Oregon, Washington, and Wisconsin.

SOURCE: Bureau of Labor Statistics Supplementary Data System.

Table 59. Cases of non-toxic lower respiratory conditions, reported to state workers' compensation agencies, by state, from 1980 to 1987

State	Number of cases							
	1980	1981	1982	1983	1984	1985	1986	1987
Alabama								
Alaska	35	20	19	15	11	21	19	18
Arizona	8	8	3	4	-	-	3	3
Arkansas	6	9	5	4	6	7	5	2
California	327	440	670	910	720	754	908	804
Colorado	27	18	30	35	35	35	28	18
Connecticut								
Delaware	1	2	1	1	-	2	1	-
District of Columbia								
Florida								
Georgia								
Hawaii	6	3	9	11	9	16	15	12
Idaho	-	-						
Illinois								
Indiana	14	9	10	21	31	37	42	28
Iowa	10	8	3	1	11	14	10	15
Kansas								
Kentucky	3	5	2	7	2	14	15	12
Louisiana						10	11	11
Maine	4	1	9	3				45
Maryland	8	8	13	7	15	9	8	9
Massachusetts	1							
Michigan	36	34	20	24	24	22	25	18
Minnesota	42	49	47	41	49			
Mississippi	2	3	2	11	3	13	12	12
Missouri	4	7	5	8	13	12	19	7
Montana	1	-	1	-	-			
Nebraska	4	6	7	8	3	14	12	12
Nevada								
New Hampshire								
New Jersey	28							
New Mexico	-	2	-	1	-	2	3	1
New York	66	72	67	61	60	86	90	87
North Carolina	2	3	4	11	3	2	1	3
North Dakota								
Ohio	23	28	13	16	29	23	22	11
Oklahoma								9
Oregon	8	5	6	11	27	17	12	9
Pennsylvania								
Rhode Island								
South Carolina								
South Dakota								
Tennessee	3	6	6	9	2	4	13	18
Texas								
Utah	5	5	3	6	5	6		
Vermont		-	1	2	-			
Virginia	1		6	42	18	15	10	6
Washington	12	6	13	14	50	42	16	27
West Virginia								
Wisconsin	93	91	6	3	7	13	11	30
Wyoming	5	14	3	12	6	14	15	-

NOTE: Non-toxic lower respiratory conditions = SDS code 572. Statistics for Arkansas, Delaware, New York, and North Carolina are for closed cases. Statistics for other states are for cases that occurred or were received during the year.

SOURCE: Bureau of Labor Statistics Supplementary Data Systems.

- indicates quantity zero. Empty space indicates information not available.

Sources and Limitations of Data

National Coal Workers' Autopsy Study

The National Coal Workers' Autopsy Study (NCWAS) is administered by the National Institute for Occupational Safety and Health (NIOSH), Division of Respiratory Disease Studies. This program was authorized by the Federal *Coal Mine Health and Safety Act of 1969*, and is currently carried out under the Federal *Mine Safety and Health Act of 1977*, an amendment to the 1969 Act.

The program is a service benefit to survivors of coal miners. The autopsy results: 1) provide medical evidence in support of black lung benefit claims; 2) assist in conducting research into the epidemiology and pathogenesis of coal workers' pneumoconiosis and silicosis; and 3) provide forensic assistance in the investigation of coal mine fatalities.

Each case submitted to the study includes lung tissue, information on the miner's cause of death, manner of death (natural, accidental, suicide, or homicide), primary job, mine location, work tenure, and smoking history. The program is voluntary; an autopsy is performed only at the request of the miner's next-of-kin. Eligibility is restricted to those miners who have worked at underground coal mines.

Approximately 5500 autopsies from 27 states were submitted to the program, from 1971 to 1989. It has been estimated that the cases in the NCWAS represent approximately 10% of all coal miners who die.

The NCWAS is unique as an autopsy program relating to a single occupational group, and stands in contrast to hospital based autopsy programs, which are often biased toward the medical specialty of the hospital staff.

Several considerations should be noted in generalizing from the NCWAS data to the entire population of coal miners. A small proportion of all miners who die are included in the NCWAS population. It is likely that miners in the NCWAS have less occupational disease than miners who are not included, as more severely affected miners may already be receiving compensation at death, and thus their families would be less likely to request an autopsy. NCWAS data probably underestimates CWP and silicosis in the overall population of coal miners at death.

For more information contact: Examination Processing Branch, Division of Respiratory Disease Studies, NIOSH, 944 Chestnut Ridge Road, Morgantown, WV 26505-2888. (304) 291-4301.

Coal Workers' X-ray Surveillance Program

The Coal Workers' X-ray Surveillance Program (CWXSP) was mandated by the *Coal Mine Health and Safety Act of 1969*. Currently, the Division of Respiratory Disease Studies, National Institute for Occupational Safety and Health (NIOSH), administers the Program.

The primary objective of the CWXSP is to screen miners for coal workers' pneumoconiosis (CWP). Miners who show signs of CWP on their chest radiographs are offered the option to transfer to an area of the mine with a respirable coal mine dust level of 1 mg/m^3 or less.

The population eligible for participation in the screening program includes all working underground coal miners estimated at approximately 80,000 in 1988. Information collected includes a posterior-anterior chest x-ray and ancillary information: miner age, tenure, and specific job in the mine. Data has been collected since 1970.

Miners employed since 1970 must have a chest radiograph at the time of hire and again 3 years later. Subsequently, working coal miners may volunteer for radiographs at approximately 5-year intervals. The chest x-rays are taken at no cost to the miners.

The chest films are interpreted by physicians or radiologists who are certified by NIOSH as proficient in use of the International Labour Office (ILO) system for classifying radiographs of pneumoconioses. Each film is seen by at least two readers, and a consensus rule is used to reach a final determination for each film. The CWXSP defines CWP as small opacity profusion category of at least 1/0 or large opacities (i.e., larger than one centimeter) consistent with pneumoconiosis.

The CWXSP is unique as a federally mandated occupational health screening program. The large number of chest x-rays (over 250,000) collected since 1970 provide a means of monitoring the incidence and prevalence of CWP since the respirable coal mine dust standard has been in effect.

Coal miner participation rates have decreased since 1970 to less than 50% of coal miners. This may introduce a selection bias. Also, crude prevalence estimates may reflect overrepresentation of newly employed miners. Thus, CWXSP data should be used with caution in relating to the entire coal mine work force.

For more information contact: Examination Processing Branch, Division of Respiratory Disease Studies, NIOSH, 944 Chestnut Ridge Road, Morgantown, WV 26505-2888. (304) 291-4301.

National Hospital Discharge Survey

The National Hospital Discharge Survey (NHDS) is conducted yearly by the National Center for Health Statistics (NCHS) and collects data on the use of short stay non-Federal hospitals in the United States. Data collected from the survey includes information on patient's age, race, sex, ethnicity (since 1985), marital status, disposition, length of stay, source of payment (since 1977), diagnoses and surgical procedures, hospital size, ownership, and region of the United States.

Since 1964 several sampling methods have been used. In 1989, data were abstracted from approximately 180,000 records from 400 hospitals. Only hospitals with six or more beds for patient use and those in which the average length of stay for all patients is less than 30 days are included in the survey.

One of the limitations of National Hospital Discharge Survey data is that it represents number of discharges, not number of cases. In addition, information is available by region and not by state. Also, information is based on physician diagnostic practices and depends on the completeness of medical records.

For more information see:
National Center for Health Statistics, E.J. Graves: Utilization of short-stay hospitals, United States, 1987, annual summary. Vital and Health Statistics. Series 13, No. 99. DHHS Pub. No. (PHS) 89-1760. Public Health Service. Washington, D.C. U.S. Government Printing Office, April 1989.

Multiple Cause of Death Data

Since 1968, the National Center for Health Statistics (NCHS) has coded all conditions listed on death certificates. The data is released annually on public use computer tapes. This has allowed researchers to evaluate interaction of diseases in causing death and also is useful in determining the number of deaths in which specific diseases play a contributing role.

Previous to the availability of multiple cause of death data, cause of death studies focused on underlying cause of death. Underlying cause of death is defined as the disease or injury that initiated events leading to death. Statistics based on underlying cause of death do not fully consider the influence of diseases which contribute to cause of death.

NCHS codes all deaths in the United States (approximately two million annually) that are reported to vital registration offices. Data coded for each decedent includes residence, age, race, sex, and ethnicity (since 1984). The usual occupation and industry of each decedent are available for some states from 1984 through 1989.

Limitations of multiple cause of death data include: under or over reporting of conditions on the death certificate by certifying physicians.

For more information see:
National Center for Health Statistics, Vital Statistics of the United States, 1987, Vol. I, DHHS Pub. No. (PHS) 89-1100 and Vol. II, Part A, DHHS Pub. No. (PHS) 90-1101, Public Health Service. Washington. U.S. Government Printing Office, 1989.

Annual Reports of Occupational Injuries and Illnesses

The Bureau of Labor Statistics (BLS) program of Occupational Safety and Health Statistics is mandated by the *Occupational Safety and Health Act of 1970*. The BLS Office of Occupational Safety and Health Statistics maintains a nationwide employer record keeping system on job related injuries and illnesses, annually compiles data from these records, analyzes the results, and reports supplementary statistics from other sources. The annual survey, done in cooperation with participating State agencies, eliminates duplicate reporting by employers and ensures maximum comparability of data.

Data are collected by mail from a sample of approximately 280,000 establishments each calendar year. Nearly all industries in the private sector (employers covered by the *Occupational Safety and Health Act of 1970*) are included. National estimates of incidence rates for injuries and illnesses, by industry, are developed from the collected data.

A limitation of the summary statistics is the under-count of chronic diseases. Diseases with a long latency are often not detected by the survey system. Also the annual survey excludes: the self-employed; farmers with fewer than 11 employees; private households; and employees in Federal, state, and local agencies.

For more information contact:
Bureau of Labor Statistics, Patrick Henry Building, 601 D Street, NW, Washington, DC 20212.

Work Injuries and Illnesses-Supplementary Data System (SDS)

This system provides details on the characteristics of occupational injuries and illnesses from records of workers' compensation systems of selected states.

SDS data, available since 1976, describe: nature of injury or illness, part of body affected, source of the injury or illness, and event or exposure which produced the injury or illness. Major SDS classifications include industry and occupation of

injured or ill workers. Additional information available for some or all participating states includes extent of disability, length of service of injured or ill workers, age, and sex.

A limitation of the data is that participation is voluntary and not all states participate on a regular basis or have the same criteria for a case. Also information for less serious cases is not coded by all states.

For more information contact: Bureau of Labor Statistics, Patrick Henry Building, 601 D Street, NW, Washington, DC 20212.

Medicare Provider Analysis and Review (MEDPAR) File

The Medicare Provider Analysis and Review File is an annual file of information for all hospital stays of Medicare enrollees. The source of data are bills for inpatient hospital services submitted to the Health Care Financing Administration. Records list a principal diagnosis and up to four additional diagnoses. The five-digit diagnostic code is assigned from the ICD-9-CM codes.

After clearing the administrative process, records are entered into the statistical system. In addition to diagnostic information, records include patient characteristics, such as age, sex, race, and state and county of residence.

Limitations of these data for occupational respiratory disease surveillance are that they represent only patients receiving Medicare benefits, and they represent hospital stays, not patients. One postitive aspect is that the data represent a complete count of all inpatient Medicare records.

For more information see: Health Care Financing Administration, Medicare Data System, by Irving Goldstein, HCFA Pub. No. 03111, Baltimore, MD., July 1981.

National Occupational Exposure Survey

From 1981 to 1983, NIOSH conducted the National Occupational Exposure Survey (NOES). The NOES collected information from 4,490 facilities in geographic locations located throughout the United States. Facilities surveyed included a representative sample of all non-agricultural, non-mining and non-governmental businesses covered under the *Occupational Safety and Health Act of 1970.*

The purpose of NOES was to determine potential exposures to hazardous chemical, physical, and biological agents in workplaces and to obtain data regarding health and safety programs by the businesses surveyed.

In tables in this report, numbers of workers exposed were estimated by multiplying proportions exposed in specific industries by the number employed in those industries based on data from the County Business Patterns for 1986. Since NOES data were collected in 1981-1983, worker exposure estimates may not reflect exposure control measures implemented after the NOES data collection period.

For more information see: National Institute for Occupational Safety and Health, National Occupational Exposure Survey, Field Guidelines, DHHS Pub. No. (NIOSH) 86-116.

County Business Patterns

County Business Patterns is an annual census report of the number of business establishments, total wage and salary employment, and payroll on an establishment basis. An employee who works for more than one employer may be counted more than once. The report series has been published annually since 1964. Survey estimates are for a mid-March period. Data is available by four-digit SIC, by state, and by county. The 1972 edition, with the 1977 supplement, of the Standard Industrial Classification is used.

County Business Patterns reports represent all employment covered by the *Federal Insurance Contributions Act* (FICA). Totally exempt from FICA, and therefore not covered in County Business Patterns, are: government employment; railroad employment jointly covered by Social Security and railroad retirement programs; self-employed persons; agricultural production; domestic service; foreign employment; and ships at sea.

For more information contact: Bureau of the Census, Washington, D.C. 20233.

MSHA Informational Reports on Mining

The Mine Safety and Health Administration (MSHA) informational reports review occupational injury and illness experience of United States miners for each year. Data are available from 1970 onward. Tables in this report are derived primarily from reports for coal mining. Data reported by mine operators include work location, occupation, and type of coal mined. Related information on employment, worktime and operating activity is also presented. Estimates of the average workforce are tabulated by state and mining activity. Data reported by contractors performing certain work at mining locations are reported separately.

Data reporting by operators of coal mines and coal preparation plants is mandated by the *Federal Mine Safety and Health Act of 1977.* Operators subject to the Act are required to submit reports of all injuries, occupational illnesses, and related data.

Incidence rates and severity measures are not calculated for reported occupational illnesses, but reported illnesses are enumerated for each work location, type of coal being mined, and State.

For more information see: Injury Experience in Coal Mining, 1988, U.S. Department of Labor, Mine Safety and Health Administration, Information Report, IR 1189, 1989. U.S. Government Printing Office, Washington, D.C. 20402. See analagous reports for other sectors of the mining industry.

Social Security Administration Disability Awards

The Social Security Administration (SSA) maintains a data base with information on each processed claim for disability benefits. Each year approximately one-third to one-half million persons are allowed benefits under the SSA program. The benefits program has been in place since 1967.

Applicants for disability benefits must be under age 65 and unable to gain employment due to physical or mental impairment. The impairment must be expected to last for 12 months and the applicant must have worked a specified number of quarters in the 10 years preceding disability.

The data base includes information on education, usual occupation, industry, diagnosis of primary disabling condition, and mobility.

For more information see: Social Security Bulletin, Annual Statistical Supplement, 1989. SSA Pub. No. 13-11700. U.S. Government Printing Office, Washington, D.C. 20402.

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