

**SUMMARY OF OCCUPATIONAL DISEASE REPORTS TO  
THE MICHIGAN DEPARTMENT OF CONSUMER AND  
INDUSTRY SERVICES**

**1998**



**Summary of 1998  
Occupational Disease Reports  
to the  
Michigan Department of Consumer & Industry Services**

A Joint Report  
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## INTRODUCTION

Since 1978, physicians, hospitals, clinics, other health professionals and employers have been required by the Michigan Public Health Code (Article 368, Part 56, P.A. 1978, as amended) to report known or suspected cases of occupational diseases. Until 1996, these reports were submitted to the Michigan Department of Public Health (MDPH). Reports are now submitted to the Michigan Department of Consumer and Industry Services (MDCIS). During the initial years after the reporting law was enacted, the number of reports received by the MDPH was generally less than one hundred each year. Following the 1988 implementation of Project SENSOR<sup>1</sup>, a statewide initiative for occupational disease surveillance, active solicitation of occupational disease (OD) reports began. Since 1988, the number of reports sent to the MDPH,/MDCIS has increased substantially. Figure 1 shows the number of occupational disease reports received each year since 1985. Over the past three years approximately 20,000 reports have been received annually. Figure 2 shows the number of reports by reporting source for 1991-1998 (the years for which this information is known).

Computerization of the OD report data, which began in 1991, allows more efficient handling of the increasing number of reports submitted and facilitates use of the reports for meaningful surveillance efforts. This is the eighth annual report on occupational diseases in Michigan, and is based upon the reports submitted to the MDCIS in 1998. An ongoing quality control process is used to eliminate duplicate reports. As a result of this effort, the number of occupational disease reports per year from 1991-1997 is slightly lower than was reported previously. The totals included in this report are more accurate.

Figure 3 is a copy of the occupational disease (OD) report that is submitted to MDCIS by companies and health care providers. The form requests medical and demographic information on the affected employee and information about both the employer and the facility at which the employee became ill. This information is used to monitor occupational diseases within the state, and to assist in directing intervention efforts.

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<sup>1</sup>Sentinel Event Notification System for Occupational Risks

## METHODS

The computerized OD records contain: 1) the affected employee's name, age, sex, race, zip code and social security number; 2) the employer's name, work site address, city, zip code, number of persons employed at the facility and the company's standard industrial classification code (SIC)<sup>1</sup>; 3) details of the illness, including date of diagnosis, suspected causative agent(s), whether the employee died, and diagnosis or clinical impression coded according to the International Classification of Diseases (ICD-9th Revision)<sup>2</sup>; and 4) information about the individual who submitted the report, including company affiliation (i.e whether the reporter is a practitioner employed by the company, or an outside medical department contracted by the company, or a private practice health professional). An OD report is initiated when a clinician knows or suspects that a patient's illness is work-related. Reports are submitted by physicians, audiologists, employers, hospitals, clinics, laboratories, state courts, and the federal Mine Safety and Health Administration. Additional reports are generated through annual review of death certificates and the Michigan Health and Hospital Association inpatient database.

More than one report on a given individual with different work-related diseases may be submitted to the MDCIS within a given year and across multiple years. If more than one report is submitted in a given year for a chronic disease<sup>a</sup> in a single individual, only one of the submissions is included in our statistics. Further, if multiple reports are submitted over several years on that individual's chronic disease, only the earliest report is included in our statistics. In contrast, if several reports are submitted for acute illnesses in a single individual, all of the reports are included in our statistics. A quality control review of all reports submitted since 1991 was performed for the 1997 annual report and again for this year's report.

## RESULTS

A total of 20,754 occupational disease reports were submitted to the MDCIS in 1998. Figure 1 shows the number of reports received each year since 1985. The quality control audit conducted this year uncovered a small number of duplicate chronic disease cases. Consequently the number of reports reflected in Figure 1 for 1991-1997 is slightly lower than was reported previously.

### Source of Reports

Nearly seventy-five percent of the reports (15,533 cases) came from company or contract medical departments. The remaining twenty-five percent (5,221 cases) came from non-company health practitioners. Most patients worked in large companies (Table 1) with 99% of the 15,612 reports that listed company size coming from businesses with more than 500 employees. A larger proportion of reports involving smaller companies (fewer than 500 employees) come from non-company health practitioners. Thirty percent of the 226 reports with known company size that were submitted by non-company practitioners involved companies with fewer than 500 employees, while less than one half

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<sup>a</sup>Appendix A lists the chronic disease categories for which duplicate reports within and across years are removed.

of one percent of the 15,386 reports with known company size that were submitted by company practitioners involved facilities with fewer than 500 employees.

Four hundred twelve private practice clinicians (non-company affiliated) reported 5,237 incidents of occupational disease. This is approximately 2000 more reports from non-company practitioners than were submitted in 1997, and reflects a significant increase in the number of dust-related lung diseases reported by x-ray 'B' readers.<sup>b</sup> Two hundred sixty-two of these clinicians (63%) reported only one patient each (Table 2), while seven clinicians reported more than one-hundred patients each. Three of these are physicians certified by the federal government to interpret chest x-rays for dust-related lung disease; one is an occupational medicine physician who practices at a hospital based clinic; and one is a large audiology group practice. The number of reports submitted by each of these sources in 1998 ranged from 127 to 2,712.

## Demographics

Table 3 shows the age, gender and race distribution of the workers with reported occupational diseases. The mean age of reported patients was  $44 \pm 14$  years (range, 16 to 94 years) with the majority of patients (70%) between the ages of 25 and 55. Fifty-four reports were submitted for patients under age 20, and 220 were submitted for patients over age 80.

Sixty-nine percent of all reports submitted were for male workers. Ninety-one percent of the submitted reports (18,930 cases) did not indicate the worker's race. Of the 1,824 reports that did indicate race, 75% were white, 18% African American, 4% Hispanic and 3% were marked "other."

**Younger workers.** Of the 54 workers under age 20, the youngest two were 16 years old, three were 17, sixteen were 18, and thirty-three were 19 years old. Fourteen of the reported patients under age 20 were women, and 40 were men.

Eighteen of the younger workers were employed in automotive manufacturing, six worked in hospitals, five in construction, three in miscellaneous manufacturing, three in metal product manufacturing, two in industrial machine manufacturing, one in farming, one in food manufacturing, one in rubber/plastics manufacturing, one in electronics manufacturing, one in wholesale/retail trade and one in a service industry. Place of employment was unknown for 11 of the reported workers.

Thirty-three of the younger workers were reported by company affiliated clinicians or contract medical departments, and twenty-one were reported by private-practice physicians. Twenty-one reports were for repetitive trauma (sprains and strains), twelve for elevated blood lead levels, seven for skin diseases, four for respiratory symptoms, two for ill-defined conditions, two for effects of toxic fumes, two for musculoskeletal injuries not related to repetitive trauma, two for eye injuries, one for heat related illness, and one for acute stress reaction. No fatalities were reported for any

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<sup>b</sup>A "B" reader is a licensed physician who has passed a test on interpreting chest x-rays for pneumoconiosis, and maintains certification by passing an additional test every 4 years.

workers under age 20. Of the twelve cases of elevated lead levels, eleven had serum lead levels between 10 and 24 micrograms per deciliter and one had a level between 25 and 39 µg/dl.

**Older workers.** Of the 191 workers over age eighty, 176 were between the ages of 81 and 89, and fifteen were between 90 and 94 years old. One hundred sixty-eight were men and 9 were women (gender was not indicated in 14 reports). All but five of these patients were reported by non-company clinicians.

One hundred forty-eight of the older workers were reported for dust-related lung disease (including 130 with asbestosis and 18 with silicosis), 26 for respiratory conditions due to toxic agents, 11 for noise-induced hearing loss, 3 for effects of toxic fumes, 2 for increased blood lead levels, and one for repetitive trauma injury.

Twenty of the older patients worked in (or were retired from) manufacturing, three worked in utility services, two in hospitals and one in construction. Occupation or former occupation was not indicated in 165 reports.

Fatality related to occupational illness was reported for eight of the older workers. The eight who died were all reported by non-company clinicians. Gender was not indicated on the reporting form for these cases. The workers who died ranged in age from 81 to 87. All eight died from asbestosis. Five of the deceased workers had been employed in automobile manufacturing and two were utility workers. Former occupation was not specified for the remaining worker.

## **Illness Information**

Table 4 shows the distribution of diagnoses or clinical impressions by reporting source. Diagnoses are grouped by major International Classification of Diseases categories (ICD-9th Revision). Overall, repetitive trauma illnesses (ICD-9 categories 800-999 except 940 and 980-989) were the most frequently reported conditions, with 8,904 cases representing 43% of all OD reports submitted. The majority of reports were for sprains and strains of the wrist, hand and finger.

Diseases of the respiratory system were the second most frequently reported conditions, with 4,130 cases representing 20% of all reports. Diseases of the nervous system and sense organs (ICD-9 320-389) were third, with 2,128 cases representing 10% of all reports submitted. There were 1,688 reports of musculoskeletal and connective tissue disease (8%), 1,388 reports of skin and subcutaneous disease (7%), 1,176 reports for toxic effects of substances (6%), 615 reports of mental disorders (3%), 127 burns to the eye (<1%), and 55 reports of cancer (<1%). Infrequently reported conditions included infectious and parasitic diseases, diseases of the digestive, circulatory and genitourinary systems, and metabolic and immunity disorders.

Four hundred twenty reports of symptoms, signs and ill-defined conditions (ICD-9 780 - 799) were also submitted, which suggests that physicians and other health care providers are reporting both *known* and *suspected* cases of occupational disease.

**Reporting source differences.** Company affiliated and non-company affiliated practitioners differ markedly in the types of occupational disease they report (Table 4). Fifty-eight percent of submissions by company health care providers are reports of repetitive trauma illnesses, while less than one percent of submissions by non-company providers represent these diagnoses. Conversely, seventy-six percent of non-company submissions are reports of respiratory illness, while less than one percent of company submissions are for respiratory illness. The second, third and fourth most frequently reported diagnoses for company providers are diseases of the nervous system and sense organs (11%), musculoskeletal system and connective tissue (11%), and skin and subcutaneous tissue (9%). Toxic effects of substances is the second most frequently reported diagnoses by non-company providers (13%). The third and fourth most frequently reported diagnoses for non-company providers are diseases of the nervous system and sense organs (7%) and cancer (1%).

Company and non-company practitioners also differ in the types of industry represented in their reports (Table 5). Ninety-seven percent of patients reported by company affiliated health care providers are employed in manufacturing, primarily automobile production. In contrast, only 62% of patients reported by non-company affiliated providers are employed in manufacturing. The second and third industry types most frequently reported by company providers are service industries (primarily hospitals) (3%) and mining (<1%). The second and third industry types most frequently reported by non-company providers are construction (15%) and utilities (10%). The type of industry was missing on 3,660 non-company and 7 company reports.

**Gender differences.** Repetitive trauma illnesses were the most frequently reported diagnoses for both men and women, with 39% of submissions on men and 56% of submissions on women reporting one of these diagnoses (Table 6). The second, third and fourth most frequently submitted diagnoses for men were diseases of the respiratory system, (25%), nervous system and sense organs (12%) and musculoskeletal system and connective tissue (7%). For women, the second, third and fourth most frequently submitted diagnoses were diseases of the skin and subcutaneous tissue (10%), musculoskeletal system and connective tissue (11%) and nervous system and sense organs (8%). Four hundred ninety-six reports did not indicate gender.

**Fatalities.** Three hundred ten reports of death related to occupational disease were submitted (Table 7). The youngest case was twenty-nine years and the oldest was eighty-seven. The mean age of persons who died was  $62.8 \pm 9.2$  years. The gender of the person who died was not indicated on most reports. Three hundred seven deaths were caused by respiratory disease. Of these, 276 were from asbestosis, 24 from respiratory conditions due to toxic agents and 7 from lung cancer. Of the three remaining deaths, two died from unspecified cancers, and the third died from the effects of toxic fumes. One hundred fifty-nine of the people who died had been employed in manufacturing industries, 109 were transportation or utility workers, and one worked at a school. Forty-one reports did not indicate the person's former occupation.

**Industry type.** Ninety-four percent of workers with a reported occupational disease were employed in manufacturing (Table 5). Of these, the vast majority (11,438) worked in automobile production facilities. Three percent worked in service industries and one percent worked in construction. The



type of industry in which the person worked was missing on 3,667 reports.

### **Comparison With Other Data Systems**

The Bureau of Workers' Disability Compensation, (a division of the MDCIS) receives reports based on claims for compensation, which are generated when an injury or illness results in the loss of seven or more work days (Michigan Employers Basic Report of Injury, Form 100). Not all claims are compensated. In 1990, the latest year for which data are available, the Bureau received 8,851 claims for compensation of occupational illnesses<sup>3</sup>. The largest category of claims received by the Bureau of Workers' Disability Compensation were for disorders due to repeated trauma, with 3,425 claims (39% of all claims submitted). This is consistent with the types of disorders most frequently submitted in OD reports. (Table 8).

Through 1994, the Michigan Department of Consumer and Industry Services also conducted annual surveys on samples of *Injury and Illness Logs*<sup>4</sup> kept by Michigan companies. In 1994, there were an estimated 52,098 occupational illnesses in the state. (Only illnesses which require more than first aid are included.) The highest percentage of estimated occupational illnesses from the 1994 survey was also for disorders due to repeated trauma, with 36,994 claims (71%), followed by 6,336 claims (12%) for occupational skin diseases or disorders. Table 8 compares the claims submitted to the Bureau of Workers' Disability Compensation in 1990, the 1994 MDCIS survey estimates, and the OD reports submitted for 1992-1998.

Disorders due to repeated trauma constituted 50% of reports to the MDCIS in 1998, which is greater than that predicted by the 1990 Workers' Disability Compensation claims (39%), but less than that predicted by the MDCIS 1994 survey (71%).

Dust diseases of the lung reported in 1998 (2,942 cases, 15% of reports) constituted a much higher percentage of total OD reports submitted than either the 1990 Workers' Compensation claims or 1994 survey estimates would predict (0.1% -0.4%). This difference is consistent with data collected by the MDCIS which demonstrates that only 40% of patients with dust diseases of the lung secondary to sand exposure (silicosis) apply for Workers' Compensation. Many of these patients are retirees who may not have filed Workers' Compensation claims, so employers may be unaware of their illness. Consequently, employer surveys and Workers' Compensation claims data tend to under-predict chronic diseases such as dust-related lung disease.

### **Hospital Discharge Data - Pneumoconiosis**

Figure 4 shows the number of individuals hospitalized in Michigan with asbestosis, coal workers' pneumoconiosis and silicosis from 1990-97. Repeat admissions of the same individuals are excluded from these counts. For most of these patients pneumoconiosis was not the primary diagnosis listed on the discharge record. As shown in Figure 5, Medicare is the primary payment source for hospitalization related to these diseases. Workers' Compensation is very rarely the source of payment,

which is consistent with findings in both Michigan and New Jersey that the majority of patients with pneumoconiosis never apply for Workers' Compensation<sup>5</sup>.

### **Hospital Discharge Data - Workers' Compensation**

Table 9 shows the primary discharge diagnosis for hospitalizations in 1992 through 1997 where the source of payment was Workers' Compensation. A broad range of conditions are covered by Workers' Compensation, including mental illnesses, infections, heart disease and cancer. The most common conditions paid for by Workers' Compensation are musculoskeletal diseases, over half of which involve the lower back. Injury and poisoning constitute the second largest category, and diseases of the skin and subcutaneous tissue the third.

The average number of hospitalizations per year that were paid for by Workers' Compensation in 1996-1997 (the most recent years for which data are available) is lower than that reported in previous years (6,112 per year for 1996-97 versus 7,002 for 1994-95, and 7,700 for 1992-93). The demographic characteristics of Workers' Compensation hospitalizations are shown in Table 10. The proportion of hospitalizations in each demographic category are fairly consistent across the six years. Seventy-five percent of the hospitalizations were for men in 1992-93 and 1996-97. This proportion dipped to 62 percent in the 1994-95 period. Among hospitalizations for which race is known, approximately 85% were white, 9-10% were African American, slightly less than 1% were Hispanic, <1% were Asian or American Indian, and 4 to 5% were listed as "other" over the six years.

The majority of hospitalizations involved workers between the ages of thirty and fifty years. Fewer than one percent involved workers under age fifteen or over age eighty. The number of hospitalizations of workers under age fifteen in 1996-97 was lower than the number reported in previous years (an average of 11 hospitalizations per year (0.2%) in 1996-97 versus 41 (0.6%) in 1994-95, and 56 (0.7%) in 1992-93.

## DISCUSSION

There were 20,754 Occupational Disease Reports sent to the MDCIS in 1998. The most frequent types of occupational diseases reported to the MDCIS were repetitive trauma illnesses (43%), respiratory disease (20%), diseases of the nervous system and sense organs (10%), and diseases of the musculoskeletal system (8%).

It is important to note that we used the ICD-9 codes to classify the diagnosis or clinical impression recorded on the occupational disease reports submitted to the MDCIS. In the ICD-9 coding system, sprains and strains are classified as injuries. However, in Michigan, employers are only required to report *illnesses* on the OD reporting form, not injuries. We assume the reports received for sprains and strains represent illness secondary to cumulative trauma, which are required to be reported.

Many employers, physicians and other health care providers do not report patients with occupational diseases either because they are unaware of the reporting law or choose not to report for a different reason. We currently receive reports from approximately 435 companies and 413 non-company physicians. There were approximately 241,117 companies and 24,237 practicing physicians in Michigan in 1998. Accordingly, we are receiving reports from 0.2% of companies and 1.7% of physicians. We have continued our efforts to remind employers of the requirement to report by routinely distributing reporting forms during MIOSHA inspections. Also, all new physicians receive information on the requirement to report when they apply for medical licensure in Michigan.

We know that the 20,000 reports received each year do not represent the actual incidence of occupational disease in Michigan. Using capture-recapture analysis we have previously estimated that 29,193 to 60,968 individuals are diagnosed with occupational diseases each year in Michigan.<sup>6</sup> Even this range is an underestimate because it assumes that all physicians recognize work related illness in their patients and that all employers are informed when work-related conditions are diagnosed. These assumptions often go unmet.

The percentage of reports received from non-company health practitioners as compared to employers is low (25%). The type of illness and the type of industry where occupational diseases occur as reported by non-company health practitioners differs from company-based health practitioners (Tables 1, 4 and 5). These differences vary depending on the specialties of the private practice physicians who submit reports. For example, the non-company health practitioners who reported patients in 1998 were more likely to report patients with respiratory disease who work in small, non-manufacturing companies. A large percentage of the 1998 reports from non-company health practitioners were from physicians who are specialists in the radiographic interpretation of mineral and dust-related lung disease. However, regardless of the mix of non-company specialists reporting, the data illustrate that relying on company based reports alone would cause occupational illness statistics to markedly under-count certain work-related conditions. We have previously reported that for 1992-1994, only 14.5% of the workers for whom an Occupational Disease Report was submitted had filed a Workers' Compensation claim, although an additional 22.7% may have filed a claim.<sup>6</sup> To determine the true burden of occupational disease in our state, multiple reporting sources must be used. Efforts to

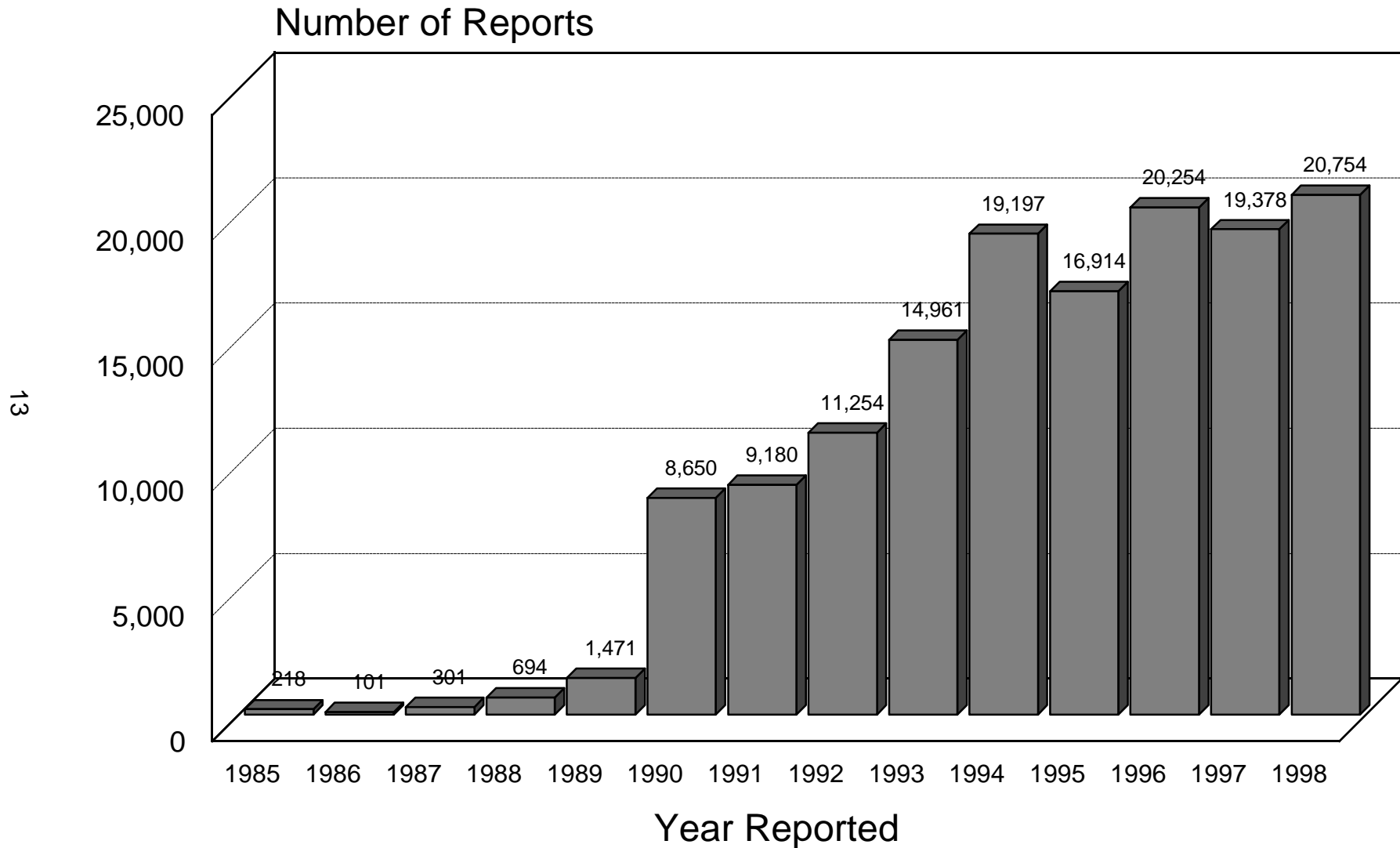
develop a comprehensive surveillance system for Michigan as well as the nation need to continue. In addition to tracking the incidence of occupational disease, such a comprehensive system would allow us to prioritize and evaluate the effectiveness of interventions designed to prevent occupational disease.

## REFERENCES

- 1 . Office of Management and Budget. *Standard Industrial Classification Manual*. Springfield, Virginia: National Technical Information Service, 1987.
- 2 . Public Health Services and Health Care Financing Administration. *International Classification of Diseases, 9th Revision, Clinical Modification*. Washington: Public Health Service, 1980.
- 3 . Michigan Department of Labor, MIOSHA Information Division. *Compensable Occupational Injury and Illness Report, Michigan 1990*. Lansing: Michigan Department of Labor, 1993.
- 4 . Michigan Department of Labor, MIOSHA Information Division. *Occupational Injuries and Illnesses Michigan Survey, 1994*. Lansing: Michigan Department of Labor, 1995.
- 5 . Stanbury M, Kipen H, and Joyce P. *Silicosis and Workers' Compensation in New Jersey*. *Journal of Occupational and Environmental Medicine* 1995; 37:1342-1347.
- 6 . Reilly MJ, Rosenman KD, Kalinowski DJ, and Deliefde JW. *Summary of 1996 Occupational Disease Reports to the Michigan Department of Public Health*. Lansing, Michigan, March 20, 1997.

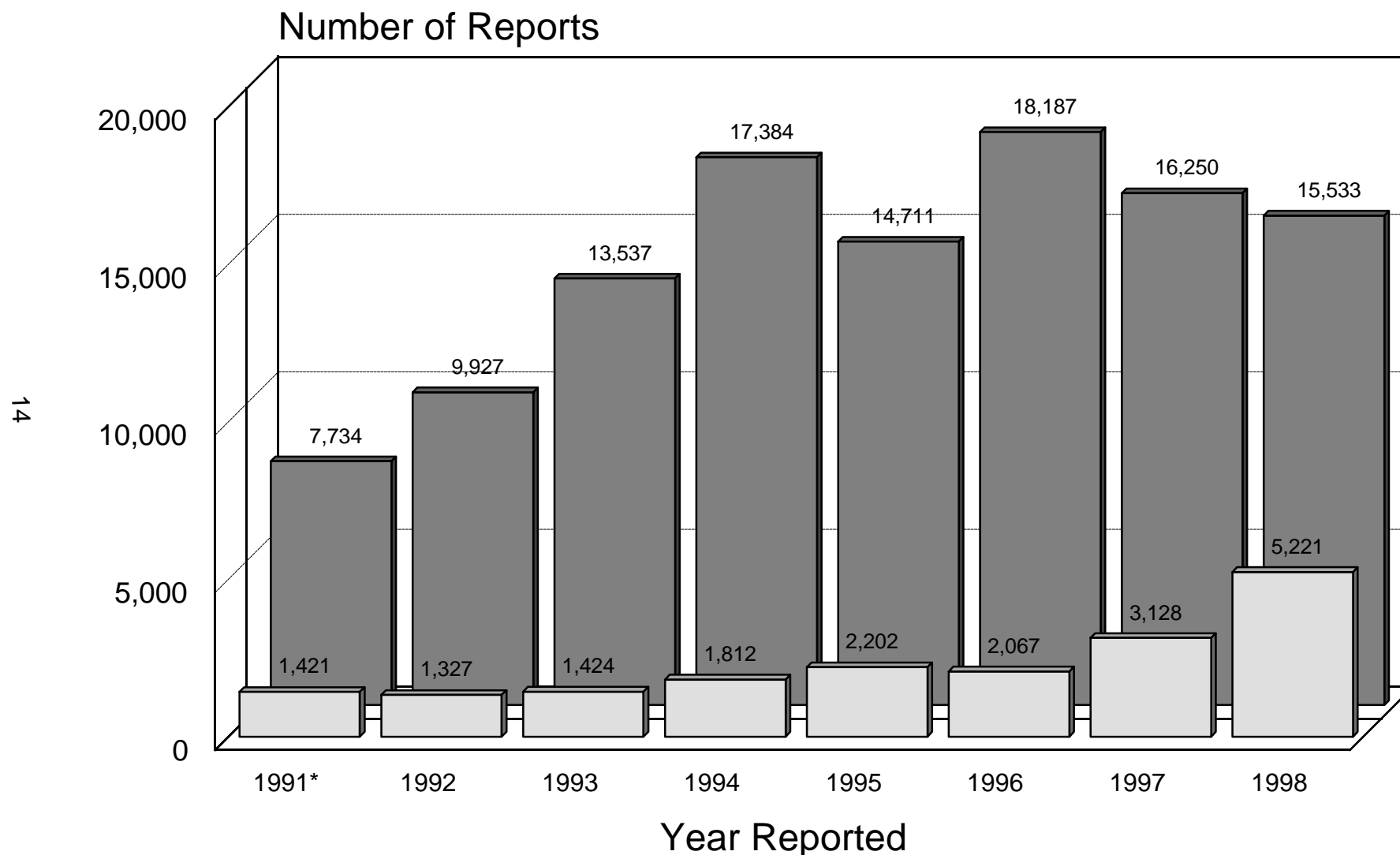
**Figure 1**

## Occupational Disease Reports to the Michigan Department of Consumer & Industry Services 1985-1998\*



\*Counts published in previous years' occupational disease reports for years 1991-1997 have been corrected in this report.

**Figure 2. Occupational Disease Reports by Reporting Source: Non-Company Health Professionals and Company or Contract Medical Departments 1991-1998<sup>a</sup>**



<sup>a</sup> Counts published in previous years' OD reports for 1991-1997 have been corrected in this report.

\* Reporting source was unknown for 25 reports.

**Known or Suspected Occupational Disease Report**

(Information will be held confidential as prescribed in Act.)

**EMPLOYEE AFFECTED**

Name (Last, First, Middle)	Age	Sex M      F	Race: <input type="radio"/> White <input type="radio"/> Black <input type="radio"/> Hispanic <input type="radio"/> Other
Street	City		State    Zip
Home Phone Number	Social Security Number		

**CURRENT EMPLOYER**

Current Employer Name	Worksite County		
Worksite Address	City	State	Zip
Business Phone	If Known, Indicate Business Type (products manufactured or work done)		
Number of Employees <input type="radio"/> <25 <input type="radio"/> 25-100 <input type="radio"/> 100-500 <input type="radio"/> >500			
Employee's Work Unit/Department	Dates of Employment From: _____ To: _____ Mo Day Year      Mo Day Year		
Employee's Job Title or Description of Work			

**ILLNESS INFORMATION**

Nature of Illness or Health Condition (Examples: Headache, Nausea, Difficulty Breathing, Cough, etc.)	Date of Diagnosis _____ Mo Day Year	
Suspected Causative Agents (Chemicals, Physical Agents, Conditions)	Did Employee Die? Yes <input type="radio"/> No <input type="radio"/>	If Yes, Date of Death _____ Mo Day Year
If Physician, Indicate Clinical Impression for Suspected Occupational Disease, or Diagnosis of Confirmed Occupational Disease		

**ADDITIONAL COMMENTS**

_____ _____ _____
-------------------------

**REPORT SUBMITTED BY**

If Report Submitted by Non-Physician, Did Employee See a Physician? <i>If yes, record information below.</i>	Yes <input type="radio"/> No <input type="radio"/> Don't Know <input type="radio"/>
Physician's Name	Phone
Office Address	City      State    Zip
Name of Person Submitting Report	Physician <input type="radio"/> Non-Physician <input type="radio"/>
Address	City      State    Zip
Signature	Phone      Date

The Michigan Department of Consumer and Industry Services is an equal opportunity, affirmative action employer, service provider and buyer.

Return completed form to:

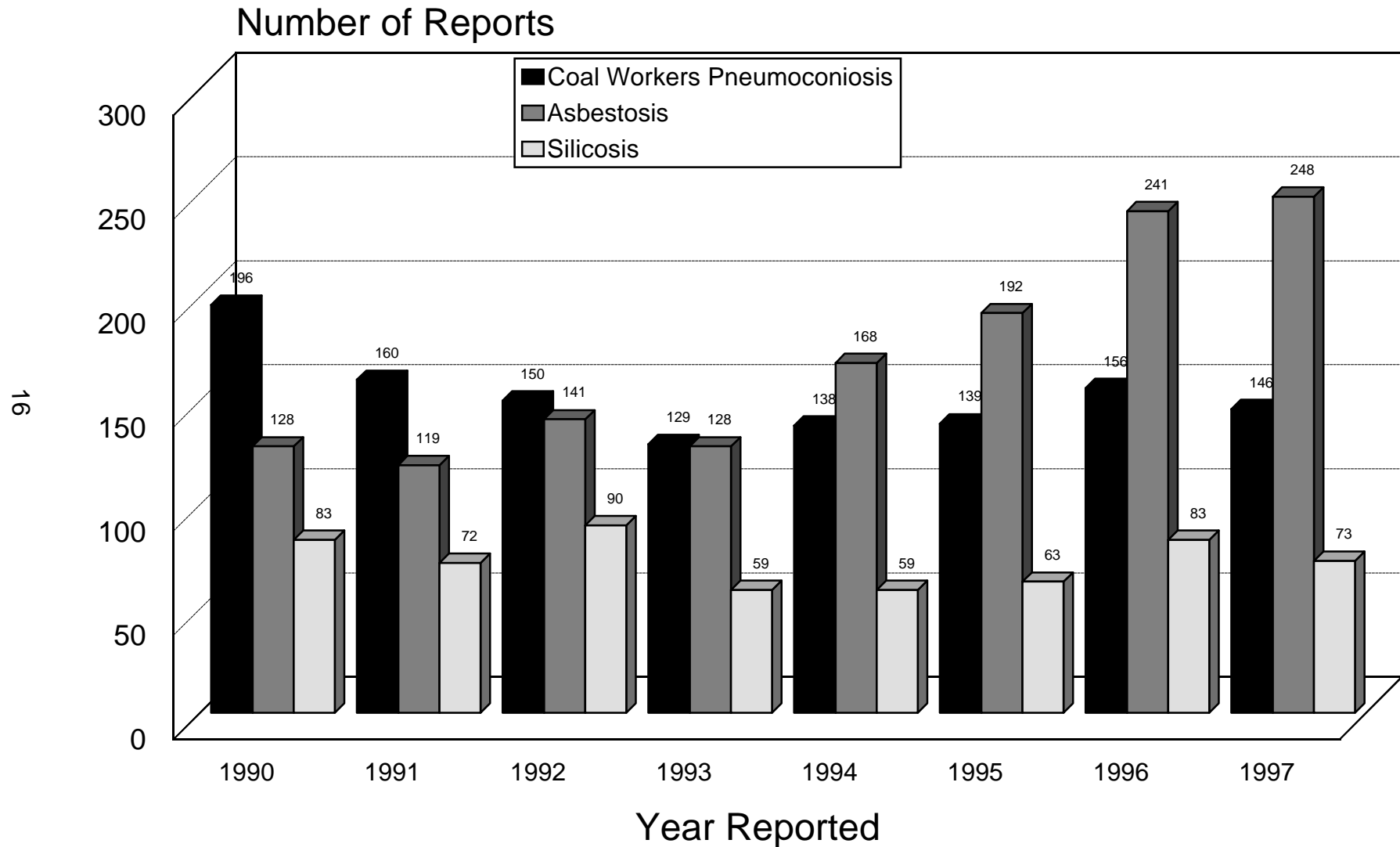
**Michigan Department of Consumer and Industry Services**  
**Division of Occupational Health**  
**Bureau of Safety and Regulation**  
**7150 Harris Drive P.O. Box 30649**  
**Lansing, MI 48909-8149**

Authority: P.A. 368 of 1978  
 Completion: Required  
 Penalty: Misdemeanor

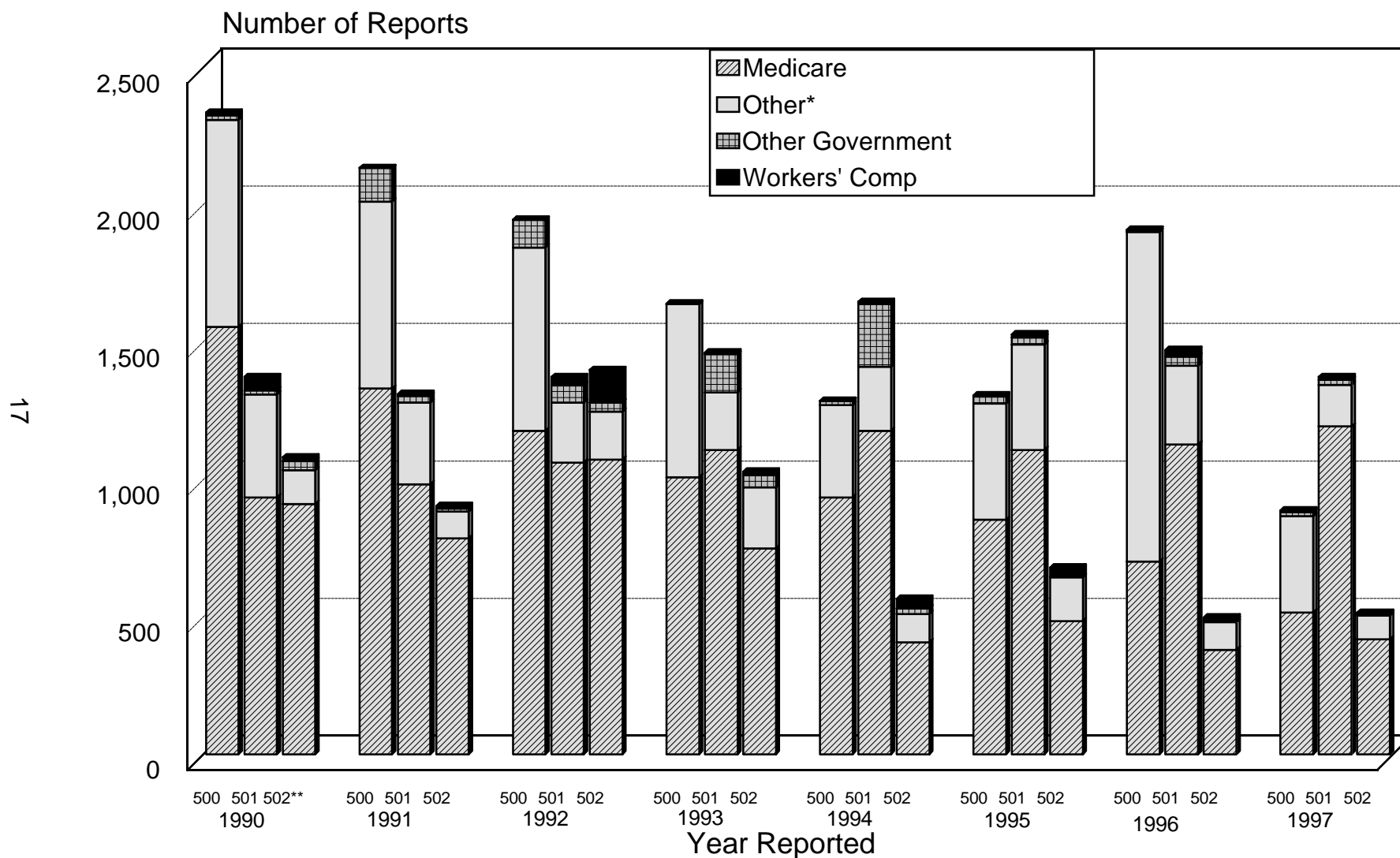


**Figure 4.**

## Number of Patients Discharged with Coal Workers' Pneumoconiosis, Asbestosis and Silicosis in Michigan: 1990-1997



**Figure 5. Number of Days Hospitalized by Payment Source for Coal Workers' Pneumoconiosis, Asbestosis and Silicosis in Michigan: 1990-1997**



\*"Other" includes Medicaid, HMOs, PPOs, Other Insurance, Self-Pay and No-Charge payment sources.

\*\* Diagnosis Codes: 500 = Coal Workers' Pneumoconiosis; 501 = Asbestosis; 502 = Silicosis

**Table 1. Number of Employees at Facilities Where an Occupational Illness Occurred (By Reporting Source: Company vs. Non-Company Clinician)**

NUMBER OF EMPLOYEES	Reports from Non-Company Practitioners		Reports from Companies		Total Reports	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
<25	25	11.1	2	<0.1	27	0.2
25-100	17	7.5	21	0.1	38	0.2
100-500	27	11.9	42	0.3	69	0.4
>500	157	69.5	15,321	99.6	15,478	99.1
Total	226 <sup>a</sup>	100	15,386 <sup>b</sup>	100	15,612	100

a The number of employees was missing on 4995 reports.

b The number of employees was missing on 147 reports.

**Table 2. Number of Occupational Disease Reports Submitted by Non-Company Health Practitioners**

Number of Reports	Number of Health Practitioners	Number of Patients Represented	Percent
1	262	262	63.6
2-5	98	281	23.8
6-10	21	147	5.1
11-20	14	210	3.4
21-40	8	210	1.9
41-100	2	128	0.5
101+	7	3999	1.2
Total	412	5237 <sup>a</sup>	100

a 114 reports were submitted by a lab for lead poisoning. These are not included in the above statistics.

**Table 3. Demographic Characteristics of Reported Occupational Disease Cases**

	<i>Number of Reports</i>	<i>Percent of Reports</i>
<b>AGE</b>		
<19	54	0.3
20-24	1018	5.2
25-29	2295	11.6
30-34	1999	10.1
35-39	2085	10.6
40-44	3032	15.3
45-49	2812	14.2
50-54	2301	11.6
55-59	1430	7.2
60-69	1406	7.1
70-79	1101	5.6
80+	220	1.1
Total	19,490 <sup>a</sup>	100
<b>GENDER</b>		
Male	14,315	70.7
Female	5,945	29.3
Total	20,260 <sup>b</sup>	100
<b>RACE</b>		
White	1364	74.8
African American	325	17.8
Hispanic	81	4.4
Other	54	3.0
Total	1824 <sup>c</sup>	100

a Age was missing on 1001 reports.

Mean age = 44± 14 years.

b Gender was missing on 494 reports.

c Race was missing on 18,930 reports.

**Table 4. Number of Occupational Disease Reports by Disease Type and Reporting Source**

<b>DISEASE TYPE</b>	<b>Non-Company</b>		<b>Company</b>		<b>Total</b>	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Infectious and Parasitic Diseases (ICD 001-139)	2	0.1	22	0.1	24	0.1
Neoplasms (ICD140-239)	55	1.1	0	–	55	0.3
Metabolic and Immunity Disorders (ICD 270-279)	0	–	1	<0.1	1	<0.1
Mental Disorders (ICD 290-319)	1	<0.1	614	4.0	615	3.0
Diseases of the Nervous System and Sense Organs (ICD 320-389)	379	7.3	1749	11.3	2128	10.3
Diseases of the Circulatory System (ICD 390-459)	2	<0.1	17	0.1	19	0.1
Diseases of the Respiratory System (ICD 460-519)	3988	76.4	142	0.9	4130	19.9
Diseases of the Digestive System (ICD 520-579)	0	--	32	0.2	32	0.2
Diseases of the Genitourinary System (ICD 581-628)	0	--	2	<0.1	2	<0.1
Diseases of the Skin and Subcutaneous Tissue (ICD 680-709)	36	0.7	1352	8.7	1388	6.7
Diseases of the Musculoskeletal System and Connective Tissue (ICD 710-739)	9	0.2	1679	10.8	1688	8.1
Symptoms, Signs and Ill-Defined Conditions (ICD 780-799)	45	0.9	420	2.7	465	2.2
Repetitive Trauma: Sprains and Strains (ICD 800-999 except ICD 940 & ICD 980-989)	12	0.2	8892	57.2	8904	42.9
Burn Confined to Eye (ICD 940)	1	<0.1	126	0.8	127	0.6
Toxic Effects of Substances Chiefly Non-Medicinal (ICD 980-989)	691	13.2	485	3.1	1176	5.7
<b>Total</b>	<b>5520</b>	<b>100</b>	<b>15,532</b>	<b>100</b>	<b>20,754</b>	<b>100</b>

**Table 5. Number of Reports by Industry Type and Reporting Source**

INDUSTRY TYPE	Non-Company		Company		Total	
	Number	Percent	Number	Percent	Number	Percent
<b>Agricultural Production or Services</b> (SIC 01,02,07)	11	0.7	0	--	11	0.1
<b>Mining</b> (SIC 10-14)	3	0.2	29	0.2	32	0.2
<b>Construction</b> (SIC 15-17)	232	14.9	2	<0.1	234	1.4
<b>Manufacturing</b> (SIC 20-39)						
Food and Kindred Products (SIC 20)	3	0.2	45	0.3	48	0.3
Paper and Allied Products (SIC 26)	1	0.1	14	0.1	15	0.1
Printing and Publishing (SIC 27)	7	0.4	0	--	7	<0.1
Chemicals and Allied Products (SIC 28)	13	0.8	138	0.9	151	0.9
Rubber and Misc. Plastics Products (SIC 30)	9	0.6	325	2.1	334	2.0
Stone, Clay, Glass & Concrete Products (SIC 32)	5	0.3	56	0.4	61	0.4
Primary Metal Industries (SIC 33)	414	26.5	716	4.6	1130	6.6
Fabricated Metal Products (SIC 34)	132	8.5	1580	10.2	1712	10.0
Industrial & Commercial Machinery & Computer Equipment (SIC 35)	27	1.7	141	0.9	168	1.0
Electronic Equipment and Components (SIC 36)	4	0.3	646	4.2	650	3.8
Transportation Equipment (SIC 37)	297	19.0	11,141	71.8	11,438	66.9
Miscellaneous Manufacturing (SIC 22, 24, 25, 29, 31, 38, 39)	52	3.3	212	1.4	264	1.5
<b>Transportation, Communications, Electric, Gas &amp; Sanitary Services</b> (SIC 40-49)	162	10.4	10	0.1	172	1.0
<b>Wholesale and Retail Trade</b> (SIC 50-59)	27	1.7	2	<0.1	29	0.2
<b>Insurance &amp; Real Estate</b> (SIC 60-67)	5	0.3	0	--	5	<0.1
<b>Services</b>						
Hospitals (SIC 80)	27	1.7	399	2.6	426	2.5
Schools (SIC 82)	37	2.4	66	0.4	103	0.6
Misc. (SIC 70,73,75,76,83,87,89)	54	3.5	2	<0.1	56	0.3
<b>Public Administration</b> (SIC 90-97)	39	2.5	2	<0.1	41	0.2
<b>Total</b>	1,561	100	15,526	100	17,087	100

a Type of industry was unknown in 3660 non-company reports and 7 company reports.

**Table 6. Number of Occupational Disease Reports by Disease Type and Gender**

<b>DISEASE</b>	<b>Males</b>		<b>Females</b>	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Infectious and Parasitic Diseases (ICD 001-139)	4	<0.1	20	0.3
Neoplasms (ICD140-239)	3	<0.1	0	--
Mental Disorders (ICD 290-319)	369	2.6	246	4.1
Diseases of the Nervous System and Sense Organs (ICD 320-389)	1668	11.7	457	7.7
Diseases of the Circulatory System (ICD 390-459)	14	0.1	5	0.1
Diseases of the Respiratory System (ICD 460-519)	3500	24.5	200	3.4
Diseases of the Digestive System (ICD 520-579)	26	0.2	6	0.1
Diseases of the Genitourinary System (ICD 581-628)	2	<0.1	0	--
Diseases of the Skin and Subcutaneous Tissue (ICD 680-709)	782	5.5	605	10.2
Diseases of the Musculoskeletal System and Connective Tissue (ICD 710-739)	1051	7.3	634	10.7
Symptoms, Signs and Ill-Defined Conditions (ICD 780-799)	245	1.7	219	3.7
Repetitive Trauma Injuries (ICD 800-999 except ICD 940 and ICD 980-989)	5569	38.9	3332	56.1
Burn Confined to Eye (ICD 940)	116	0.8	11	0.2
Toxic Effects of Substances Chiefly Non-Medicinal (ICD 980-989)	965	6.7	209	3.5
Total <sup>a</sup>	14,314	100	5,944	100

a Gender was missing on 496 reports.

**Table 7.** Number of Reported Occupational Disease Fatalities

	<i>Number</i>	<i>Percent</i>
Fatal	310	1.5
Non-Fatal	20,444	98.5
Total	20,754	100



**Table 8. Comparison of 1990 MDCIS Workers' Disability Compensation Claims and 1994 Occupational Illness Survey Data with 1992-1998 Occupational Disease Reports**

DISEASE CATEGORY	MDCIS Survey & Compensation Claims				MDCIS Occupational Disease Reports <sup>a</sup>							
	1994 Survey <sup>b</sup>		1990 Claims <sup>c</sup>		1992-1993		1994-1995		1996-1997		1998	
	Number	Percent	Number	Percent	Mean Number <sup>d</sup>	Percent	Mean Number <sup>d</sup>	Percent	Mean Number <sup>d</sup>	Percent	Number	Percent
Occupational Skin Diseases or Disorders	6,336	12.2	372	4.2	776	6.0	1,034	5.9	1,405	7.3	1,388	6.9
Dust Diseases of the Lung	186	0.4	12	0.1	914	7.1	966	5.5	1,159	6.0	2,942	14.6
Respiratory Conditions Due to Toxic Agents	2,590	5.0	87	1.0	290	2.3	570	3.0	799	4.1	1,187	5.9
Poisoning	765	1.5	403	4.6	207	1.6	315	1.8	631	3.3	1,051	5.2
Disorders Due to Physical Agents	1,944	3.7	80	0.9	469	3.6	419	2.4	414	2.1	357	1.8
Disorders Due to Repeated Trauma	36,994	71.0	3,425	38.7	7,151	55.8	10,601	60.3	11,293	58.3	9,843	48.9
All Other Occupational Illnesses	3,283	6.3	4,475	50.5	2,972	23.2	3,680	20.9	3,668	18.9	3,364	16.7
Number of Reports Per Year	52,098		8,851		12,779 <sup>e</sup>		17,585		19,369		20,132	

- a Counts published in previous years' OD reports for 1992-1997 have been corrected here.
- b 1994 is the last year this report was generated. Combines public and private sector reports.
- c 1990 is the last year this report was generated.
- d Number of reports *per year* (averaged over the 2 years)
- e Type of occupational disease was missing on 97 reports

**Table 9. Primary Diagnosis of Workers' Compensation Hospitalizations in Michigan 1992 - 1997<sup>a</sup>**

PRIMARY DIAGNOSIS	1992-1993		1994-1995		1996-1997	
	Mean Number <sup>b</sup>	Percent	Mean Number <sup>b</sup>	Percent	Mean Number <sup>b</sup>	Percent
Infectious & Parasitic Diseases (001-139)	21	0.3	43	0.6	58	1.0
Neoplasms (140-239)	30	0.4	15	0.2	15	0.2
Endocrine, Nutritional, Metabolic Diseases & Immunity Disorders (240-279)	31	0.4	26	0.4	15	0.2
Diseases of the Blood & Blood Forming Organs (280-289)	7	0.1	5	0.1	7	0.1
Mental Disorders (290-319)	124	1.6	97	1.4	61	1.0
Diseases of the Nervous System & Sense Organs (320-389)	220	2.9	185	2.6	111	1.8
Diseases of the Circulatory System (390-459)	215	2.8	185	2.6	173	2.8
Diseases of the Respiratory System (460-519)	103	1.3	78	1.1	68	1.1
Diseases of the Digestive System (520-579)	167	2.2	139	2.0	116	1.9
Diseases of the Genitourinary System (580-629)	68	0.9	45	0.6	40	0.7
Complications of Pregnancy, Childbirth, & the Puerperium (630-676)	65	0.9	25	0.4	37	0.6
Diseases of the Skin & Subcutaneous Tissue (680-709)	199	2.6	249	3.6	210	3.4
Diseases of the Musculoskeletal System & Connective Tissue (710-739)	3251	42.5	2866	41.0	2499	40.9
Congenital Anomalies (740-759)	37	0.5	24	0.3	17	0.3
Conditions Originating in the Perinatal Period (760-779)	1	<0.1	1	<0.1	1	<0.1
Symptoms, Signs, and Ill-Defined Conditions (780-799)	100	1.3	108	1.5	105	1.7
Injury & Poisoning (800-999)	2750	35.6	2719	38.9	2435	39.9
V Codes	286	3.7	183	2.6	139	2.3
Total	7645	100	6993	100	6105	100

a Principal diagnosis was unknown for 14 cases in 92-93, 17 cases in 94-95 and 14 cases 96-97

b Number of cases per year averaged over the 2 years

**Table 10. Demographic Characteristics of Hospitalizations Paid for by Workers' Compensation in Michigan 1992 - 1997<sup>a</sup>**

	1992 -1993		1994-1995		1996-1997	
	<i>Mean Number<sup>b</sup></i>	<i>Percent</i>	<i>Mean Number<sup>b</sup></i>	<i>Percent</i>	<i>Mean Number<sup>b</sup></i>	<i>Percent</i>
<b>GENDER</b>						
Male	5698	74.0	5343	61.7	4687	76.7
Female	2002	26.0	1659	38.3	1425	23.3
Total	7700	100	7002	100	6112	100
<b>RACE</b>						
White	5733	85.7	4876	86.1	3644	84.4
African American	565	8.4	526	9.3	439	10.2
Asian	5	0.1	14	0.2	6	0.1
American Indian	1	<0.1	2	<0.1	8	0.2
Hispanic	36	0.5	47	0.8	32	0.8
Other	353	5.3	197	3.5	169	3.9
Total	6693	100	5662	100	4298	100
<b>AGE</b>						
<15	56	0.7	41	0.6	11	0.2
15-19	151	2.0	148	2.1	94	1.5
20-29	1301	17.2	1081	15.5	873	14.3
30-39	2321	30.6	2054	29.4	1740	28.6
40-49	1880	24.8	1826	26.1	1743	28.6
50-59	1237	16.3	1258	18.0	1147	18.8
60-69	487	6.4	455	6.5	385	6.3
70-79	112	1.5	101	1.4	87	1.4
80+	34	0.4	28	0.4	13	0.2
Total	7579	100	6992	100	6093	100

<sup>a</sup> Gender, Race and Age were not reported for all hospitalizations.

<sup>b</sup> Number of hospitalizations per year averaged over the 2 years.

## APPENDIX A

### Chronic Occupational Diseases

Multiple reports for an individual patient with one of the following diseases may be submitted within and across years, but only one of these submissions is counted in our statistics.

<b><u>ICD-9 Code</u></b>	<b><u>Description</u></b>
011	Pulmonary Tuberculosis
015	Tuberculosis of the bones and joints
135	Sarcoidosis
137	Tuberculosis , Late Effects of
140-239	Neoplasms (Cancers)
250-259	Diseases of Other Endocrine Glands
260-269	Nutritional Deficiencies
270-279	Metabolic and Immunity Disorders Except 276, Dehydration
280-289	Disease of the Blood and Blood Forming Organs
290-319	Mental Disorders Except 308:Acute Reaction to Stress, and 309: Adjustment Reaction
320-340	Selected Diseases of the Nervous System and Sense Organs
388-389	Disorders of the Ear: Noise Induce Hearing Loss, Tinnitus
390-409	Selected Diseases of the Circulatory System
491-505	Selected Diseases of the Respiratory System
509	Pleural Plaques with no parenchymal abnormality marked on the ILO Form
515	Interstitial Lung Disease, Pulmonary Fibrosis
517	Connective Tissue Lung Disease
520-579	Diseases of the Digestive System
580-629	Diseases of the Genitourinary System