

**2004**

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**Annual Summary of  
Occupational Disease Reports  
to the Michigan Department  
of Labor and Economic  
Growth**



# Summary of 2004 Occupational Disease Reports to the Michigan Department of Labor and Economic Growth

A Joint Report  
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September 2, 2005

*This report was funded by the National Institute for Occupational Safety and Health,  
under cooperative agreement #U60-CCU502998-18.*

## SUMMARY

There were 15,105 occupational disease (OD) reports submitted to the Michigan Department of Labor and Economic Growth (MDLEG), in calendar year 2004 as required under the Michigan Occupational Disease Reporting Law. These reports were submitted by company medical departments or clinics under contract to companies, to provide occupational health services to their employees, as well as health practitioners in private practice who are providing occupational health services. The percentage of reports received from company medical departments has decreased from 84-91% in the early 1990s to approximately 59% in the last three years.

The most frequent types of reports were of repetitive trauma (28%), respiratory disease (23%), poisonings (16%) and diseases of the nervous system and sense organs (15%). The number of reports submitted in 2004 is slightly lower than the previous year, but very similar to the number of reports received in 2002 and 2003. From 1999 to 2002, there was a downward trend of reporting; 21,538 reports were received in 1999 and 14,938 reports were received in 2002. This could represent an actual reduction in occupational diseases occurring in the state or poorer compliance with the reporting law.

Companies tend to report different types of illnesses than independent health practitioners. For example, there were 3,277 (53%) reports from independent providers for diseases of the respiratory system while only 233 (3%) such reports were received from employers (Table 4).

The average age of individuals reported was 49 years, ranging from 12 to 97. Sixty-three percent of individuals reported were between the ages of 25 and 55. Sixty-eight percent of all reports submitted were for male workers.

There were differences in the types of reports received through the OD reporting system compared to illnesses identified through either the Bureau of Labor Statistics' Annual Survey of a sample of employers or the Michigan Workers' Compensation Claims system (Table 8).

In 2002, Michigan's two Poison Control Centers began to submit work-related reports. Approximately 1,500 reports were received from these Centers in 2004. Given the complementary nature of all the existing programs, we envision that by combining data across systems we will be able to better characterize and understand the extent and distribution of individuals who become sick and injured at work. This is an essential first step in reducing the burden of these preventable injuries and illnesses in our state.

# 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 Labor and Economic Growth (formerly the Michigan Department of Consumer and Industry Services). 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 the Sentinel Event Notification System for Occupational Risks (Project SENSOR), a statewide initiative for occupational disease surveillance began, with active solicitation of occupational disease reports. MDLEG contracts with Michigan State University's College of Human Medicine, Occupational and Environmental Medicine Division to assist in handling the occupational disease reports.

Computerization of the OD reports began in 1991, with more efficient handling of the high volume of reports submitted and facilitating the use of these reports to direct surveillance, intervention and prevention. This is the thirteenth annual report on occupational diseases in Michigan, and is based upon the reports submitted to the MDLEG in calendar year 2004.

Figure 1 is a copy of the occupational disease report that is submitted to MDLEG by companies and independent health care providers. The form requests medical and demographic information on the affected employee and information about 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 and prevention efforts.

On-line occupational disease reporting has been available since 2001 through the Michigan State University Occupational and Environmental Medicine website: [www.oem.msu.edu](http://www.oem.msu.edu). A secure server is used to maintain the confidentiality of the information submitted on-line. The ability to submit audiogram results was added to on-line reporting in 2003, for cases of occupational noise-induced hearing loss. The health professional electronically submitting occupational disease reports is first given a choice between submitting an occupational disease report for hearing loss or for any other illness. If hearing loss is selected, the user is directed to a screen to report the standard occupational disease report information. Next, the user is asked whether audiogram results will be submitted electronically or via fax or mail. If submitted electronically, a screen to enter audiogram results can be used to report right and left ear hearing thresholds ranging from 250 Hz to 8000 Hz. In addition to completing the OD report form (Figure 1) on-line, information can be submitted by:

\*Email: [ODReport@msu.edu](mailto:ODReport@msu.edu)

\*Fax: (517) 432-3606

\*Phone-in: 1-800-446-7805

\*Request postage paid envelopes: 1-800-446-7805

\*Mail directly to: MDLEG, MIOSHA

Management & Technical Services Division

7150 Harris Drive, PO Box 30649

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## METHODS

The computerized OD records contain: 1) the 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 diagnosis date, 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 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, the 3<sup>rd</sup> Judicial Court of Michigan (which processes the majority of the asbestos-related claims in Michigan), the two Michigan Poison Control Centers 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.

Since October 11, 1997, all clinical laboratories doing business in Michigan have been required to report all blood lead analysis results for both adults and children, to the Michigan Department of Community Health. The blood lead results of 10 µg/dL or greater for adults are incorporated into the Occupational Disease reports submitted each year to the MDLEG. Many of the adults reported through this system have had blood lead testing as part of their company's monitoring program. However, it is the clinical laboratories that actually submit the results to the state, not the employers. In fact, aside from the clinical laboratory reports of blood lead analysis, employers themselves almost never submit an elevated blood lead level report to the MDLEG, even though they would be required to do so under the Michigan Occupational Disease Reporting Law. In light of this, blood lead reports submitted by the clinical laboratories are all considered as non-company reports, even though the company may have initially ordered the blood lead test.

In 2004, we changed the way blood lead reports are counted in the OD report statistics. Prior to 2004, if an individual had multiple blood lead tests performed throughout the year, and they were all reported to the state, each report was counted in the year's statistics. Starting in 2004, we are now only counting each individual one time regardless of the number of blood lead tests they may have had throughout the year.

In 2002 the collection of information on work-related illnesses from the two Michigan Poison Control Centers (PCC) began. On a monthly basis, the work-related reports are incorporated into the occupational disease reporting database. In 1999, for example, 1,406 (1.6%) of the 87,604 human exposure-related PCC calls were related to occupational exposures.

More than one report on a given individual with different work-related diseases may be submitted to the MDLEG within a given year and across multiple years. If more than one report is submitted in a given year for a chronic disease in a single individual, only one of the

submissions is included in our statistics. 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 for a single individual, all of the reports are included in our statistics. Appendix A lists the chronic disease categories for which duplicate reports within and across years are removed.

## RESULTS

A total of 15,105 occupational disease reports were submitted to the MDLEG in calendar year 2004. Figure 2 shows the number of reports received each year since 1985.

### Source of Reports

Company or contract medical departments submitted 59% of the reports (8,920 cases). Non-company health practitioners submitted the remaining 41% of the reports (6,185 cases) (Figure 3). Most reports were submitted on individuals who worked in large companies (Table 1) with 92% of the 9,558 reports that listed company size coming from businesses with more than 500 employees. A greater proportion of reports involving companies with fewer than 500 employees come from non-company health practitioners. Just over 41% of the 983 reports with known company size that were submitted by non-company practitioners involved companies with fewer than 500 employees, while just over four percent of the 8,575 reports with known company size that were submitted by company practitioners involved facilities with fewer than 500 employees.

Five hundred seventy-seven private practice clinicians (non-company affiliated) reported 4,568 incidents of occupational disease. In addition, the two Michigan Poison Control Centers reported 1,508 incidents of work-related poisonings. Two hundred sixty-four (82%) of the clinicians reported only one patient each in calendar year 2004 (Table 2), while four clinicians and one occupational medicine practice reported more than 100 patients each. The number of reports submitted by these four clinicians and medical practice in the year 2004 ranged from 130 to 1,846. Two of the clinicians are certified to interpret chest x-rays for dust-related lung disease ("B" readers); one is an occupational medicine physician who practices at a hospital based clinic; and one is an occupational medicine physician in private practice. 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 four years. Currently, there are 10 Michigan physicians who are "B" readers.

### Demographics

Table 3 shows the age, gender and race distribution of the workers with occupational diseases reported in the year 2004. The mean age of reported patients was  $49 \pm 15$  years (range, 12 to 97 years) with almost two-thirds of the patients (63%) between the ages of 25 and 55 years. One

hundred forty reports were submitted for patients under age 20, and 393 reports were submitted for patients over age 79.

Sixty-eight percent of all reports submitted were for male workers. Eighty percent of the submitted reports (12,107 cases) did not indicate the worker's race. Of the 2,998 reports that did indicate race, 68% were Caucasian, 29% were African American, 2% were Hispanic and 1% were listed as "other."

*Younger workers.* Of the 88 workers age 18 and younger, one was 12 years old, four were 15 years old, 15 were 16 years old, 28 were 17 years of age, and 40 were 18 years old. Thirty-six (41%) of the reported patients under age 19 were women and 52 (59%) were men.

Five of the younger workers were employed in the services industry, three worked in public administration, two worked in retail trade, one was employed in manufacturing, and one was employed in construction. Place of employment was unknown for 76 workers.

Four of the younger workers were reported by company affiliated clinicians or clinics. Sixty-two workers were reported for unspecified poisonings (from the Poison Control Centers), 14 for an elevated blood lead level, eight were for respiratory symptoms, two were for exposure to tuberculosis, and two were for diseases of the skin. No fatalities were reported for any workers under age 19. Of the 14 cases of elevated lead levels, 13 had serum lead levels between 10 and 24 micrograms per deciliter, and one had a serum lead level between 25 and 45 micrograms per deciliter.

*Older workers.* Of the 393 workers age eighty and older, 365 were between the ages of 80 and 89, and 28 were between 90 and 97 years of age. One hundred ninety-two were men, three were women and gender for 198 individuals was unknown. A company-affiliated clinician or contract medical clinic reported one of these patients.

Three hundred sixty-six of the older workers were reported for dust-related lung disease (including 71 with asbestosis, 282 with pleural thickening, and 13 with silicosis), 14 for noise-induced hearing loss, seven for cancer, three for elevated blood lead levels, one for a respiratory condition, one for dermatitis, and one for an unspecified poisoning.

Forty-three of the older patients worked in or were retired from manufacturing, five worked in the utilities industry, four worked in the services industry, and one worked in mining. Industry or former industry was not indicated in 340 reports.

## **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 were the most frequently reported conditions, with 4,289 cases representing 28% 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 condition, with 3,510 cases representing 23% of all reports submitted. Toxic effects of substances (poisonings) were the third most frequently reported conditions, with 2,370 cases representing 16% of all reports. Diseases of the nervous system and sense organs represented 2,253 (15%) of the cases. There were 1,654 (11%) reports of musculoskeletal and connective tissue disease, 350 (2%) reports of skin and subcutaneous tissue disease, 182 (1%) reports of mental disorders, 73 (0.5%) reports of cancer, and 34 (0.2%) burns to the eye. Infrequently reported conditions included infectious and parasitic diseases, diseases of the digestive system, diseases of the genitourinary system, and diseases of the circulatory system.

Two hundred eighty-four (2%) reports of symptoms, signs and ill-defined conditions 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 and non-company affiliated practitioners differ markedly in the types of occupational diseases reported (Table 4). Forty-eight percent of reports from company health care providers are of repetitive trauma illnesses, while less than one percent of reports by non-company providers represent these diagnoses. Conversely, 53% of non-company reports are of respiratory illness, compared to three percent of company submissions. The second, third and fourth most frequently reported diagnoses for company providers are diseases of the nervous system and sense organs (20%), diseases of the musculoskeletal system and connective tissue (18%), and diseases of the skin and subcutaneous tissue (4%). Poisonings (toxic effects of substances) are the second most frequently reported diagnoses by non-company providers (38%). 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 industries represented in their reports (Table 5). Eighty-five percent of patients reported by company affiliated health care providers are employed in manufacturing, primarily automobile production. In contrast, 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 (7%) and public administration (5%). The second and third industry types most frequently reported by non-company providers are construction (14%) and services (9%). The type of industry was missing on 4,282 non-company and 19 company reports.

**Gender differences** . Repetitive trauma illnesses were the most frequently reported diagnoses for both men and women, with 29% of submissions on men and 39% of submissions on women (Table 6). The second, third and fourth most frequently submitted diagnoses for men were diseases of the nervous system and sense organs (19%), poisonings (19%), and diseases of the respiratory system (17%). For women, the second, third and fourth most frequently submitted diagnoses were diseases of the musculoskeletal system and connective tissue (17%), poisonings



(16%), and diseases of the nervous system and sense organs (13%). One thousand seven hundred eighty-six reports did not indicate gender.

**Fatalities.** Fatalities related to occupational illnesses were reported for 89 workers (Table 7). None of the fatalities reported were from acute incidents. The state has a separate program to track acute traumatic fatalities, called MIFACE (Michigan Fatality Assessment and Control Evaluation). The MIFACE program identified an additional 128 acute work-related traumatic fatalities in 2004 that occurred in our state. A separate report is prepared on these 128 deaths ([www.oem.msu.edu](http://www.oem.msu.edu)).

Non-company clinicians reported all but one of the 89 of the individuals with occupational illnesses who died. Four were males; gender was unknown for the remaining 85 cases. The age range of the workers who died was from 45 to 89 years. Fifty-three individuals died from asbestos-related cancer (neoplasms), 25 died from asbestosis, and 11 died from asbestos-related pleural thickening (mesothelioma). Forty-four of the deceased workers had been employed in manufacturing, 10 worked in utilities, and one worked for a railroad. Former occupation was not specified for 34 workers.

## Comparison With Other Data Systems

**Published Data in Michigan at a Disease Category Level.** Table 8 compares data from the OD reporting system with Workers' Compensation Claims and the MDLEG Annual Survey. These data suggest that the magnitude of occupational conditions among Michigan workers is greater than what currently gets reported.

The most recent data that is available from the MDLEG Bureau of Workers' Compensation (BWC) at a disease-category level is from 2001. In that year, there were 8,902 claims due to occupational illnesses and 42,550 claims for occupational injuries. Although not yet available at a disease-category level, in 2003 (the most recent year for which this information is available) the BWC reported 38,425 claims for both occupational injuries and illnesses.

The other major data on occupational injuries and illnesses available in Michigan comes from the MDLEG annual survey of company injury and illness logs. For this data source, the most recent data available at a disease category level is also from 2001 with an estimate of 31,700 occupational illnesses in the state. Table 8 compares occupational disease reports received by MDLEG with this survey and the BWC reports.

**Hospital Discharge Data - Workers' Compensation.** Figure 4 shows the number and percent of patients as well as hospitalizations paid for by Workers' Compensation (WC) for the years 1992 through 2003. The numbers of hospitalizations per year that are paid for by Workers' Compensation from 1998-2003 are decreased as compared to the years 1992-1997. In addition, the percentage of hospitalizations that are paid for by WC has decreased since 1994 (Figure 5). In 2003, 0.39% of the 1,324,372 Michigan hospitalizations were paid for by Workers' Compensation.

Table 9 shows the primary discharge diagnosis for hospitalizations from 1992 through 2003, where the primary source of payment was WC. WC covers a broad range of conditions, including mental illness, infections, heart disease and cancer. The most common conditions covered by WC are musculoskeletal diseases, accounting for approximately 40-45% of patient WC-related hospitalizations from 1992-2003. The second most frequent conditions covered by WC during this same time period are injuries and poisoning, accounting for 35-40% of all WC-related patient hospitalizations.

The demographic characteristics of patients with WC hospitalizations are shown in Table 10. Almost 75% of the hospitalizations were for men, across all years from 1992 to 2003. Among hospitalizations for which race was known, approximately 85% were white, 10% were African American, 1% were Hispanic, <1% were Asian or American Indian, and 2-5% were listed as "other."

The majority of hospitalizations involved workers between the ages of 30 and 50 years. Less than 1% involved workers under the age of 15 or over the age of 80 years. The percentage of hospitalizations of workers under the age of 20 has decreased slightly over time, from 3% in 1992 to 1.4% in 2003.

***Hospital Discharge Data - Pneumoconiosis.*** Figure 6 shows the number of individuals hospitalized in Michigan with asbestosis, coal workers' pneumoconiosis and silicosis from 1990 to 2003. Repeat admissions of the same individual within each calendar year are excluded from these counts. For most of these patients, pneumoconiosis was not the primary discharge diagnosis listed on the discharge record. For the past decade, there has been a steady increase in the number of hospitalizations for asbestosis (Figure 6). From 2002 to 2003, there was a 40% increase in the number of hospitalizations for asbestosis. This increase probably represents a more widespread recognition of asbestos-related radiographic changes from medical screenings performed in the 1990s, although it could be from a true increase in the incidence of asbestos-related disease. Regulations to control asbestos exposure were not promulgated until the early 1970s and were not widely implemented until the 1980s. Given the 25 year or greater latency period from the time of first exposure to the development of asbestos-related radiographic changes, the cases being identified now represent exposures from these earlier unregulated years. The trend we are seeing in Michigan is consistent with national data published in the NIOSH 2002 Work-Related Lung Disease Surveillance Report on asbestosis ([www.cdc.gov/niosh/docs/2003-111/2003-111.html](http://www.cdc.gov/niosh/docs/2003-111/2003-111.html)).

As shown in Figure 7, Medicare is the primary payment source for hospitalizations related to these dust diseases of the lung. WC 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 WC<sup>3,4</sup>.

***Mesothelioma/Asbestosis.*** The association between exposure to asbestos and the risk of developing mesothelioma was first reported in the medical literature in 1943<sup>5</sup>. The only other

exposure associated with the risk of developing mesothelioma has been the therapeutic use of x-rays. The percentage of patients with mesothelioma who have a history of occupational asbestos exposure is lower in studies that are based on review of medical records compared to studies based on a complete work history where 90% of mesothelioma has been attributed to asbestos exposure<sup>6</sup>. Among cohorts of asbestos-exposed workers, up to 10% of deaths have been attributed to mesothelioma.

Asbestos-related lung disease is the most common of the dust diseases reported to the Michigan Department of Labor and Economic Growth. The number of reports of asbestosis in 1999 was 3,384, decreased to a low of 677 reports in the year 2002, and increased in 2004 to 1,008 (Figure 8). The number of reports of pleural thickening decreased from 2001 to 2002, from 2,397 to 1,269 reports. In 2003, the number of reports of asbestos-related pleural thickening increased to 1,847, and in 2004 1,976 reports were submitted. The reports for asbestos-related x-ray changes are largely from one of Michigan's B-readers as well as an occupational medicine physician.

We have used data from the Michigan Cancer Registry to describe the demographics of mesothelioma in Michigan. From 1985 through the year 2002 there were 1,696 Michigan residents reported to the Michigan Cancer Registry with invasive mesothelioma. Figure 9 shows the number of men and women diagnosed with mesothelioma by year, from 1985 to 2002. Approximately one quarter (25.5%) of the reports of mesothelioma occurred in women. Mesothelioma occurred predominantly among Caucasians (93.5%) compared to African Americans (5.6%). Approximately 1% were classified as "other" ancestry.

Figure 10 shows the age at diagnosis separately for men and women. The peak age of occurrence of mesothelioma was for individuals 65 years and older for both men and women.

Figure 11 shows the distribution of the number of cases of mesothelioma among Michigan residents, by county. Figure 12 shows the average annual incidence rates of mesothelioma among Michigan residents, by county. The counties with the highest rates are: Presque Isle (4.6 per 100,000); Bay (4.2 per 100,000); Alger (4.1 per 100,000); Mackinac (3.7 per 100,000); Ontonagon (3.6 per 100,000); and Midland (3.5 per 100,000).

**Poison Control Center Data.** In 2004, a total of 1,508 calls to one of the two Michigan Poison Control Centers were identified as work-related. Table 11 reports the available demographic characteristics of the individuals reported. There were more reports for males (60%) than females (40%). The individuals ranged in age from 12 to 80 years. Almost 90% of these individuals were less than age 50. More detailed information about the nature of these poisonings is available, but not in a format that is readily analyzable.

## DISCUSSION

There were 15,105 Occupational Disease Reports sent to the MDLEG in calendar year 2004. The

most frequent types of occupational diseases reported to the MDLEG were repetitive trauma illnesses (28%), respiratory disease (23%), toxic effects of substances (16%), and diseases of the nervous system and sense organs (15%). From 1988 through 1999, the number of reports sent to the State has increased substantially. Figure 2 shows the number of occupational disease reports received each year since 1985. From 1999 to 2002, the number of reports decreased. This year, in 2004, there was a slight decrease in the number of reports received, with approximately 800 fewer reports received than in 2003. The overall decline in the number of reports reflects fewer reports from company medical departments, while the number of reports from private practitioners has remained relatively unchanged the last seven years (Figure 3). The cause for this decrease is unknown. The actual number of companies reporting in 2004 increased to 373 from 305 in 2003.

We used the ICD-9 codes to classify the diagnosis or clinical impression recorded on the occupational disease reports submitted to the MDLEG. In the ICD-9 coding system, sprains and strains are classified as injuries. Employers are only required to report *illnesses* on the OD reporting form, not injuries. Sprains and strains, except those involving the back, are considered by the Federal and Michigan OSHA programs as illnesses secondary to cumulative trauma, and are therefore 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 373 companies and 322 non-company physicians. There were approximately 250,000 companies in the year 2004 and 26,551 practicing physicians in Michigan in the year 2004. Accordingly, we are receiving reports from 0.1% of companies and 1.2% of physicians. Over the last several years, these percents have remained largely unchanged. 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 15,000-20,000 reports received each year do not represent the actual incidence of occupational diseases in Michigan. Using capture-recapture analysis we have previously estimated that 29,193 to 60,968 individuals are diagnosed with diseases caused by work place exposures each year in Michigan<sup>7</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. Given the limited training that health care providers receive in diagnosing work-related conditions, and that many individuals never inform their employer when they are diagnosed with a work-related condition, these assumptions often go unmet.

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

the year 2004 were more likely to report patients with respiratory disease who work in small, non-manufacturing companies. A large percentage of the year 2004 reports from non-company health practitioners were from physicians who are specialists in the radiographic interpretation of mineral and dust-related lung disease. Without these reports the increased diagnosis of asbestos related lung disease would be missed (Figure 8). 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. For the years 1992-1994, only 9.6% of the workers for whom an Occupational Disease Report was submitted had definitely filed a Workers' Compensation reference claim, although an additional 36% may have filed a claim for a total of 45.6%<sup>8</sup>.

Review of Table 8 shows a large difference in the distribution of occupational illnesses identified through the state's OD reporting system, compared to both the Bureau of Labor Statistics' (BLS) Annual Survey of Employers and the state's Workers' Compensation (WC) claims system. For example, respiratory disease represents approximately 17% (2,435) of the OD reports, while that category of diseases only accounts for 4% (1,200 cases) of the BLS survey and only 2% (145 cases) of WC claims.

To determine the true burden of occupational disease in our state, multiple reporting sources must be used. A newer source added to the state's system for tracking occupational diseases, are the two Poison Control Centers in Michigan. These Centers contributed an additional 1,508 reports to the 2004 total of occupational diseases.

In addition to tracking the incidence of occupational disease, a more comprehensive system would allow us to identify areas of concern in our state, develop interventions designed to prevent additional occupational disease, and then evaluate the effectiveness of these efforts.

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# Figure 1. Occupational Disease Reporting Form

Michigan Department of Labor and Economic Growth Management and Technical Services Division  
**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? If yes, record information below.			
		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 Labor and Economic Growth is an equal opportunity, affirmative action employer, service provider and buyer.

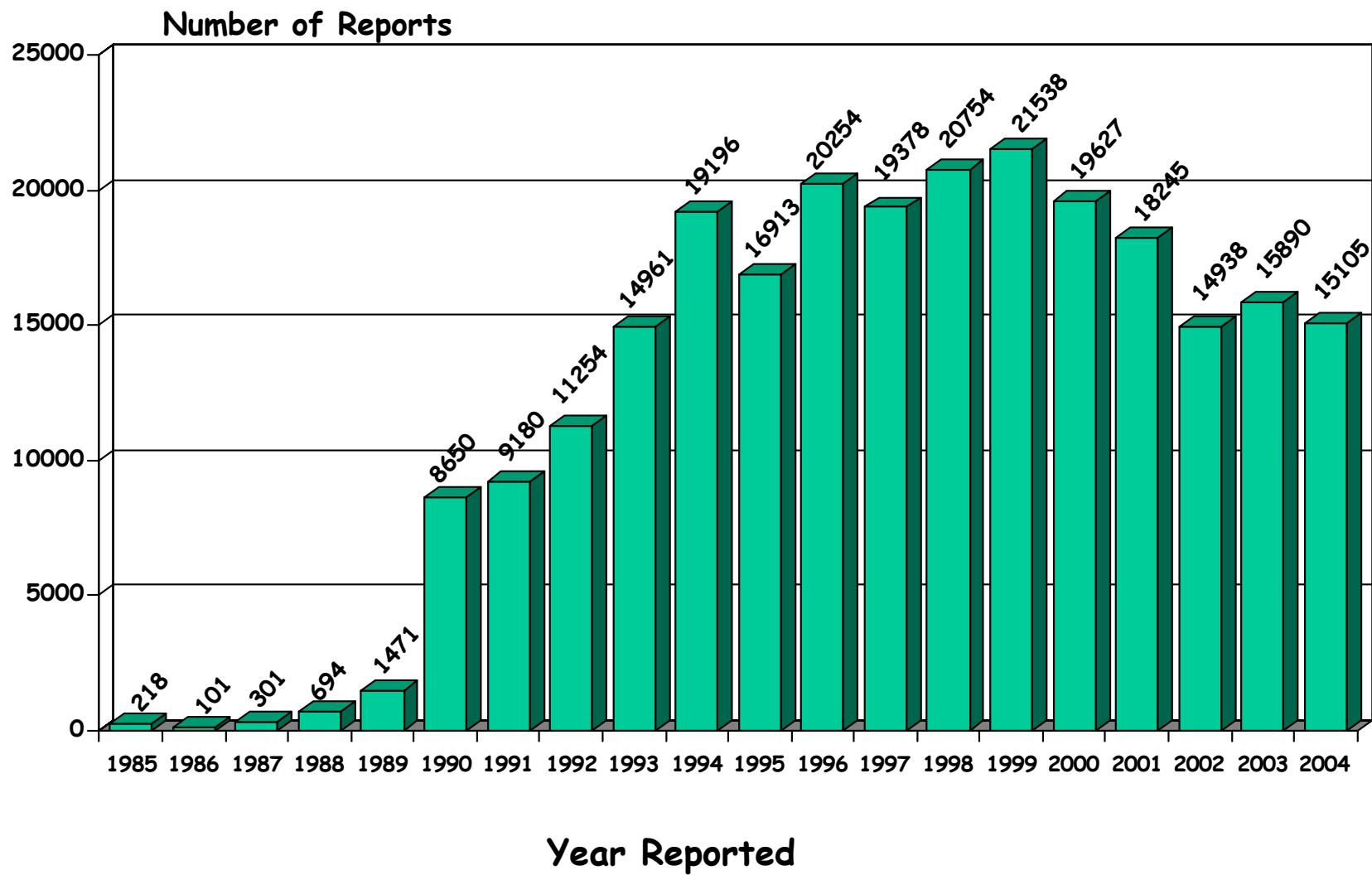
Return completed form to:

**Michigan Department of Labor and Economic Growth**  
**Michigan Occupational Safety and Health Administration**  
**Management and Technical Services Division**  
**7150 Harris Drive, P. O. Box 30649**  
**Lansing, MI 48909-8149**

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

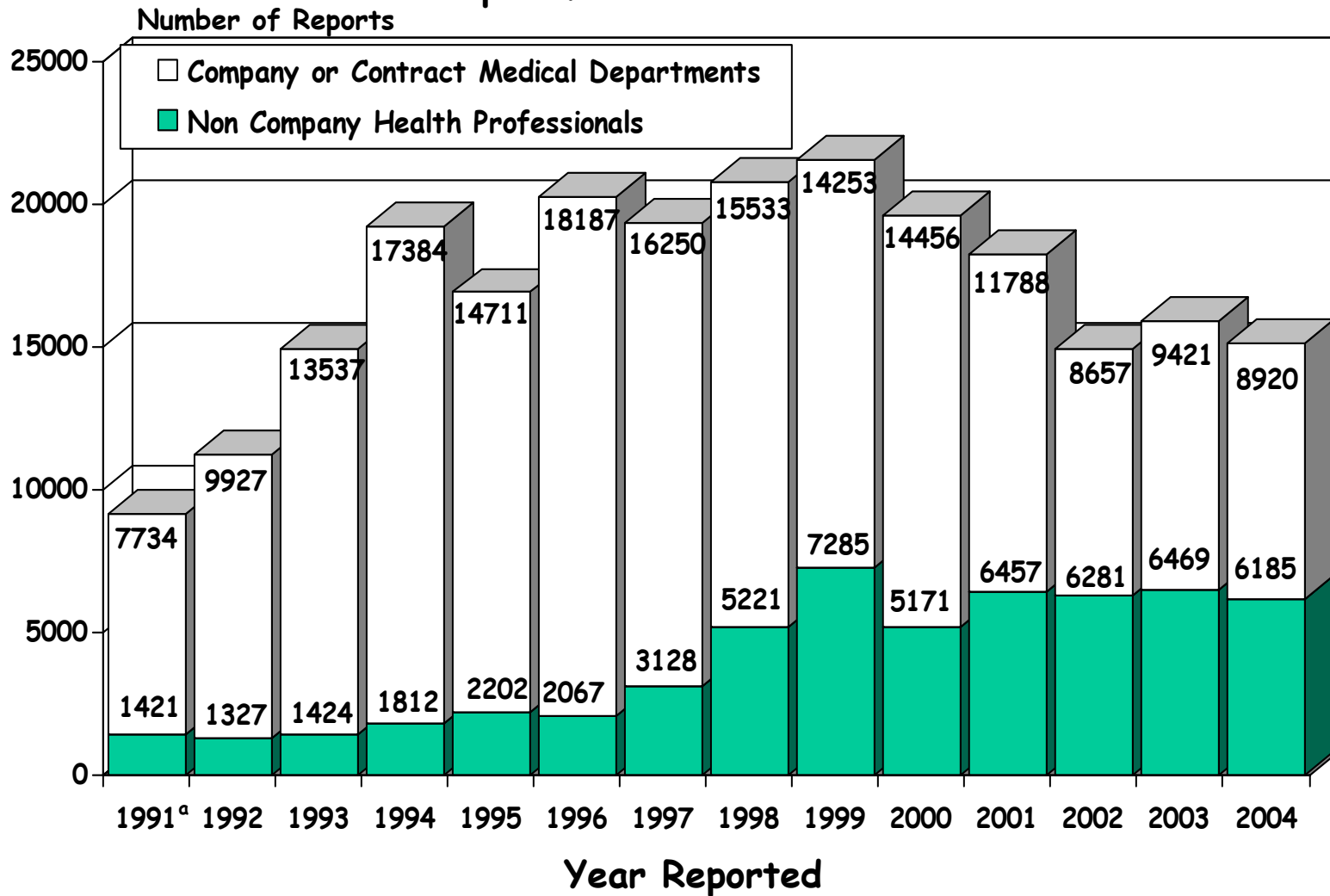
MIOSHA-MTSD-51 (12/03)

Figure 2. Occupational Disease Reports to the Michigan Department of Labor and Economic Growth: 1985-2004



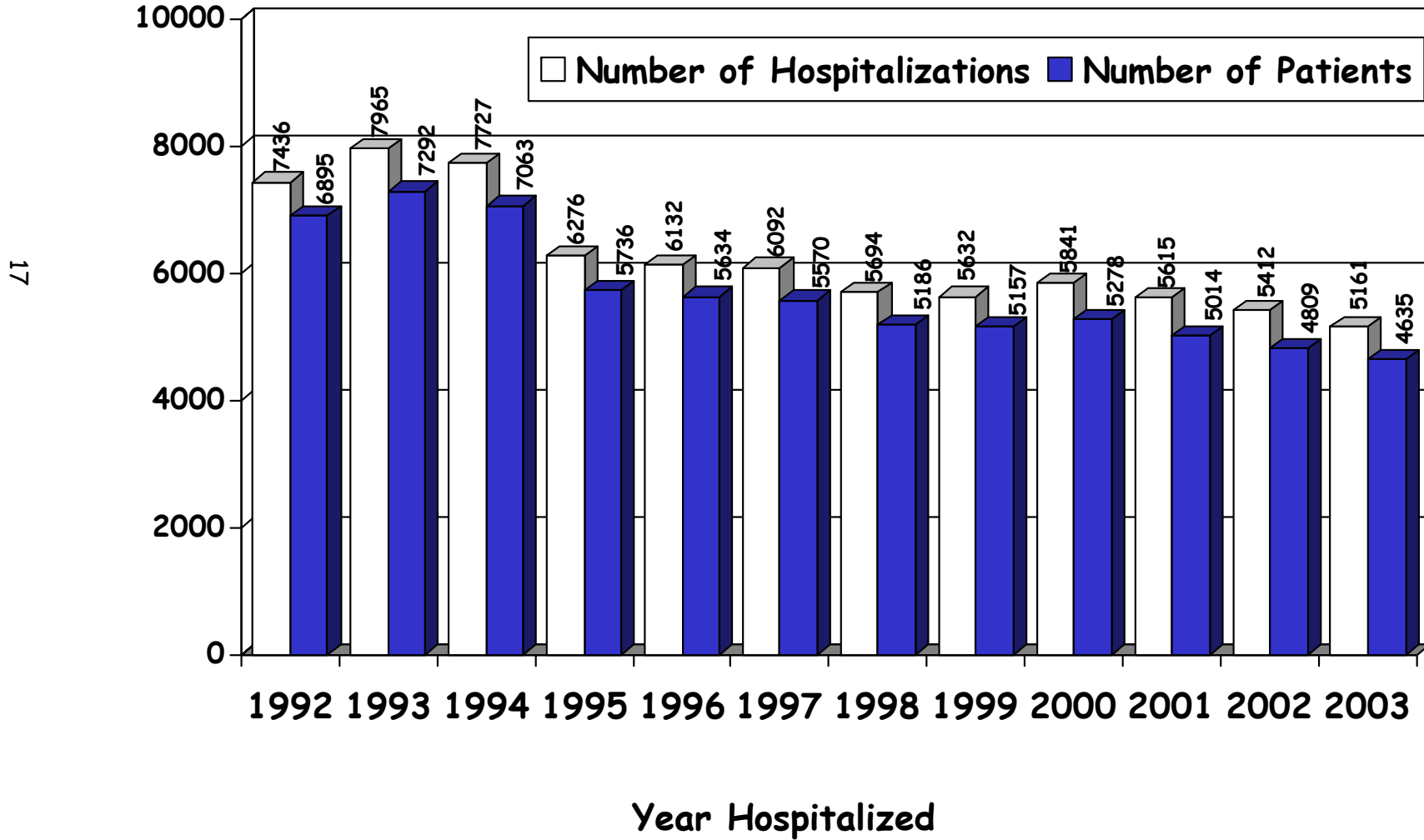


**Figure 3. Occupational Disease Reports by Reporting Source, Non-Company Health Professionals and Company or Contract Medical Departments: 1991-2004**

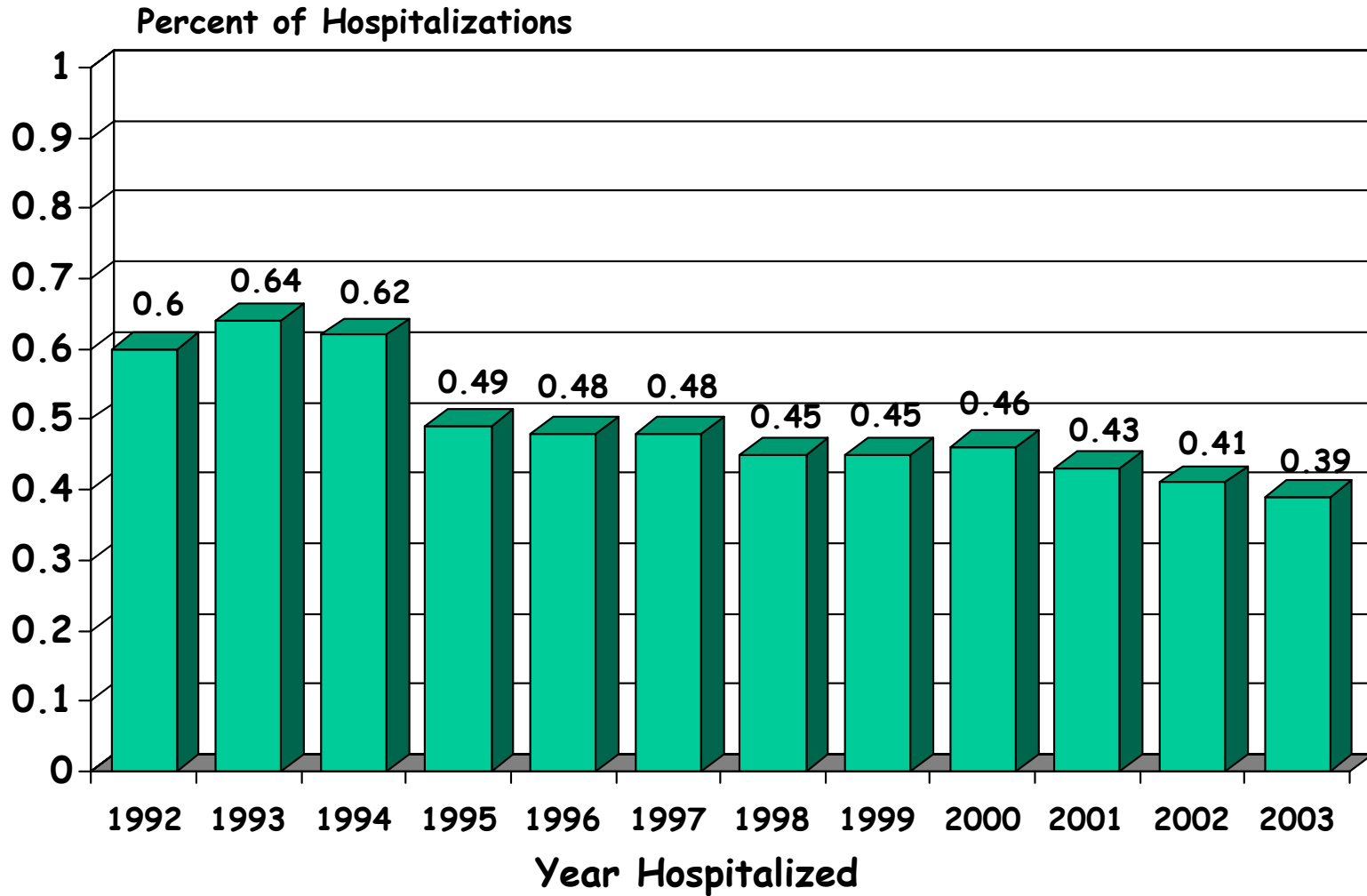


<sup>a</sup>Reporting source was unknown for 25 reports.

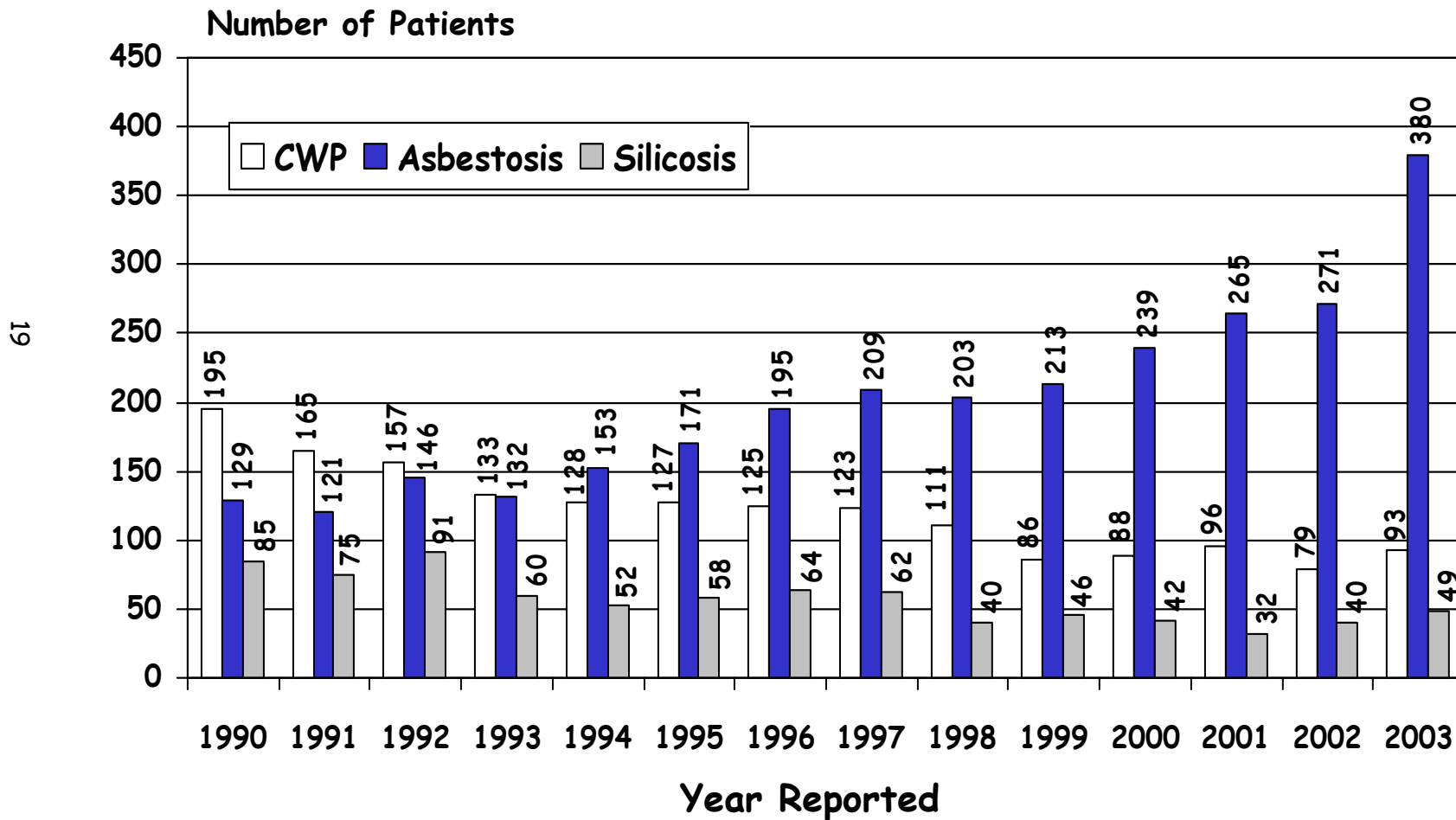
**Figure 4. Number of Hospitalizations and Number of Patients Paid for by Workers' Compensation in Michigan: 1992-2003**



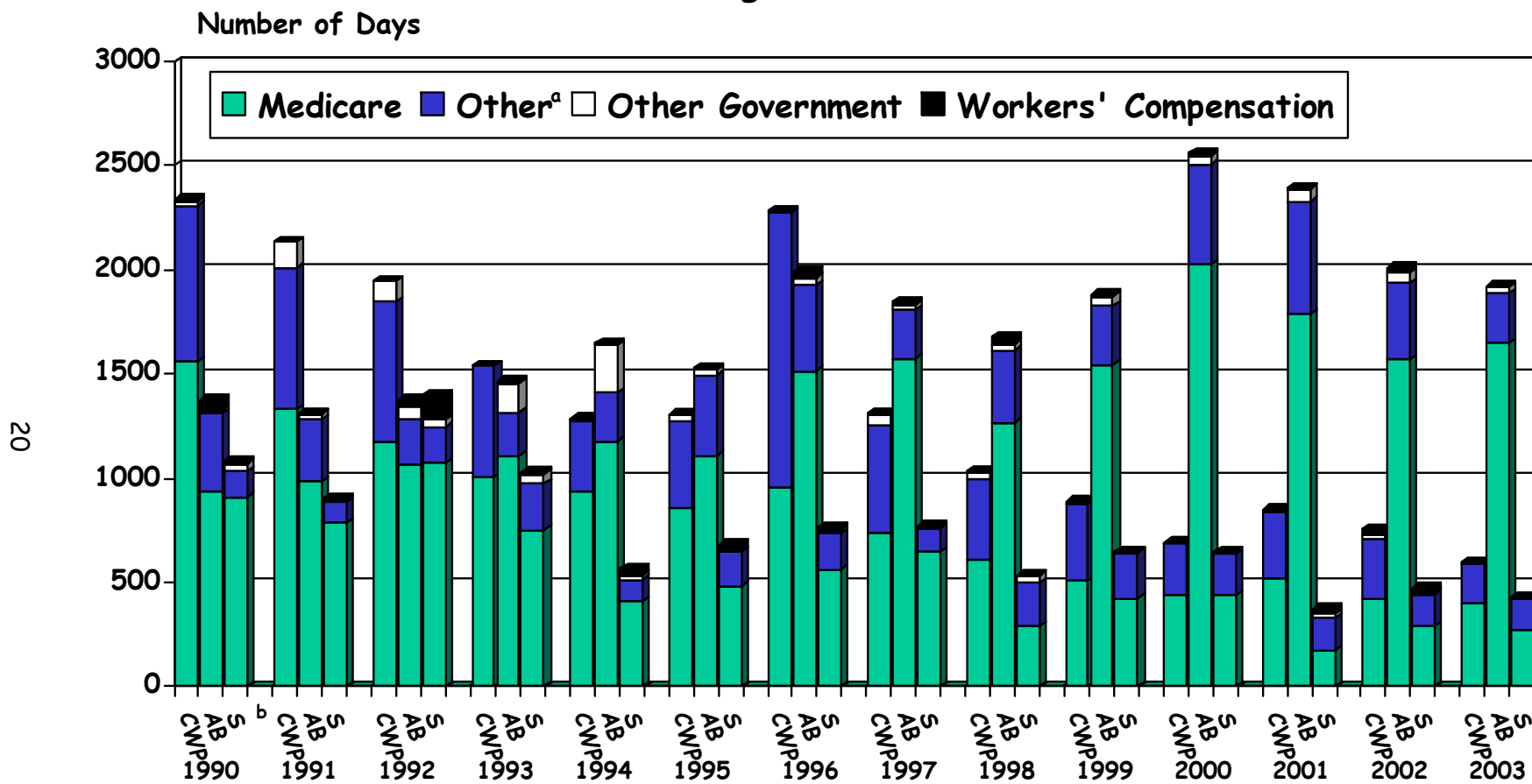
**Figure 5. Percent of Total Michigan Hospitalizations Paid for by Workers' Compensation: 1992-2003**



**Figure 6. Number of Patients Discharged with Coal Workers' Pneumoconiosis (CWP), Asbestosis and Silicosis in Michigan: 1990-2003**



**Figure 7. Number of Days Hospitalized by Payment Source for Coal Workers' Pneumoconiosis, Asbestosis and Silicosis in Michigan: 1990-2003**



<sup>a</sup>"Other" includes: Medicaid, HMOs, PPOs, Other Insurance, Self-Pay and No-Charge payment sources.

<sup>b</sup>Diagnosis codes: CWP=Coal Workers' Pneumoconiosis; AB=Asbestosis; S=Silicosis.

**Figure 8. Asbestos-Related Cases Reported to the Michigan Department of Labor and Economic Growth: 1989-2004**

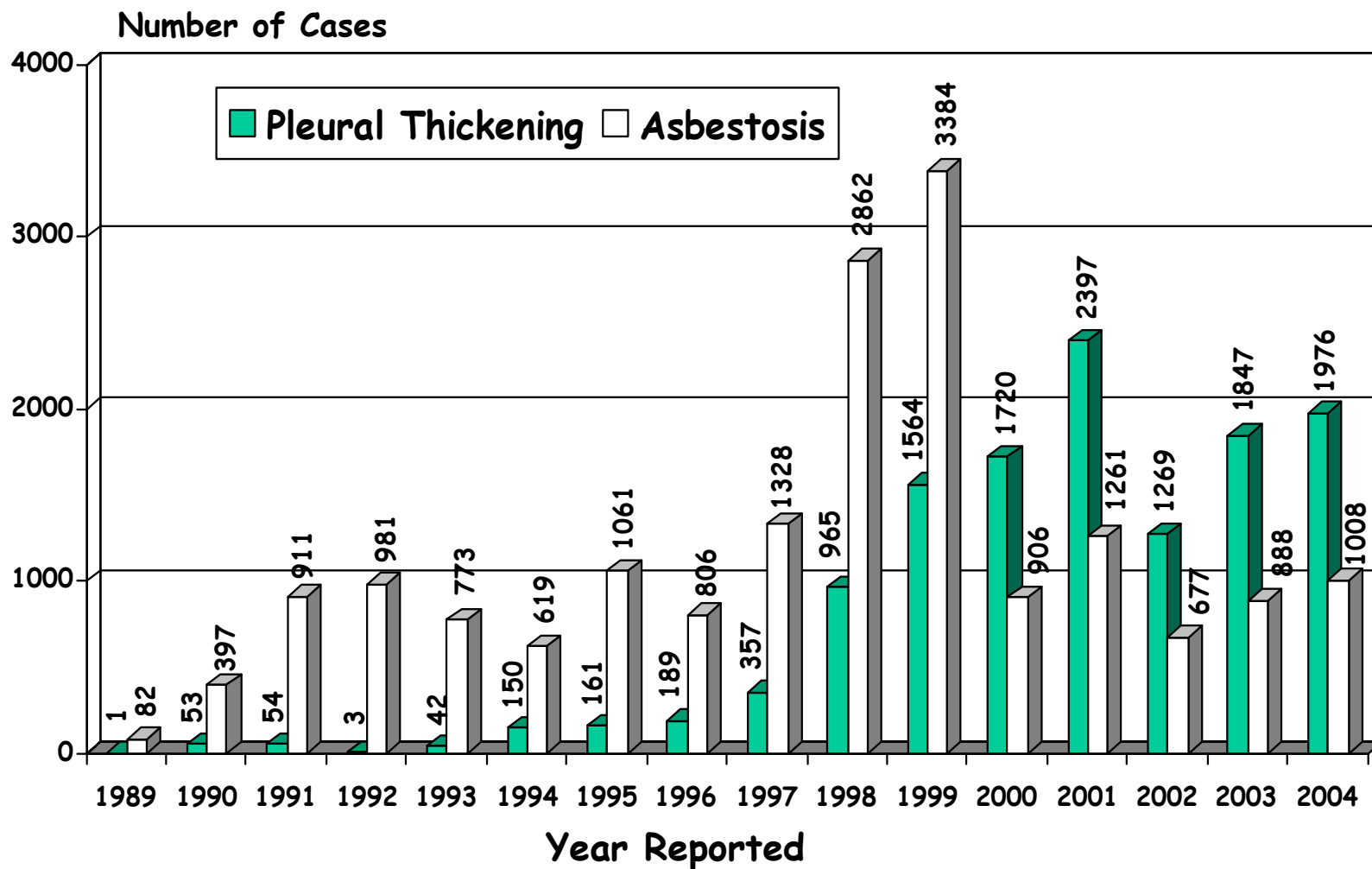


Figure 9. Number of Men and Women in Michigan Diagnosed with Mesothelioma: 1985-2002

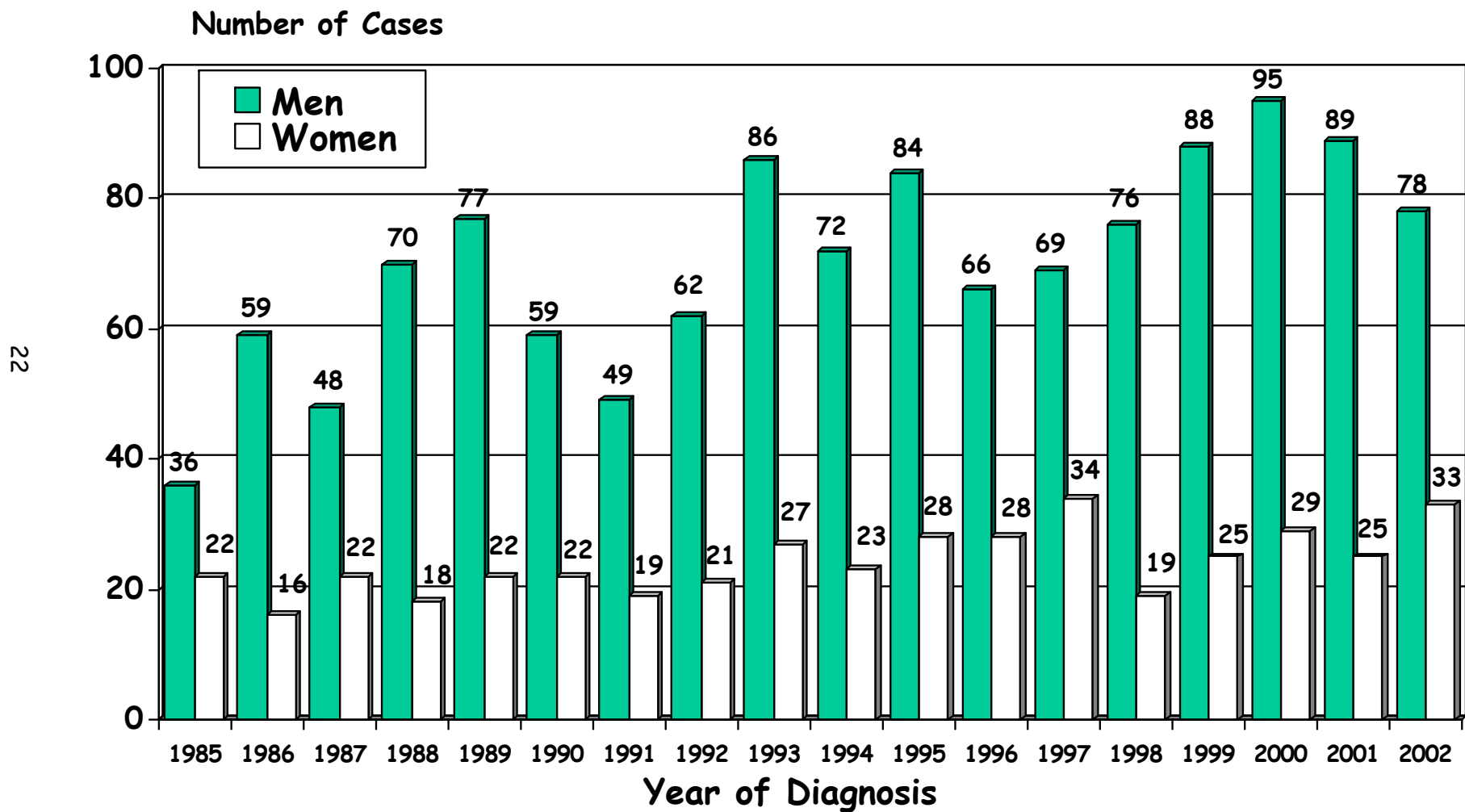
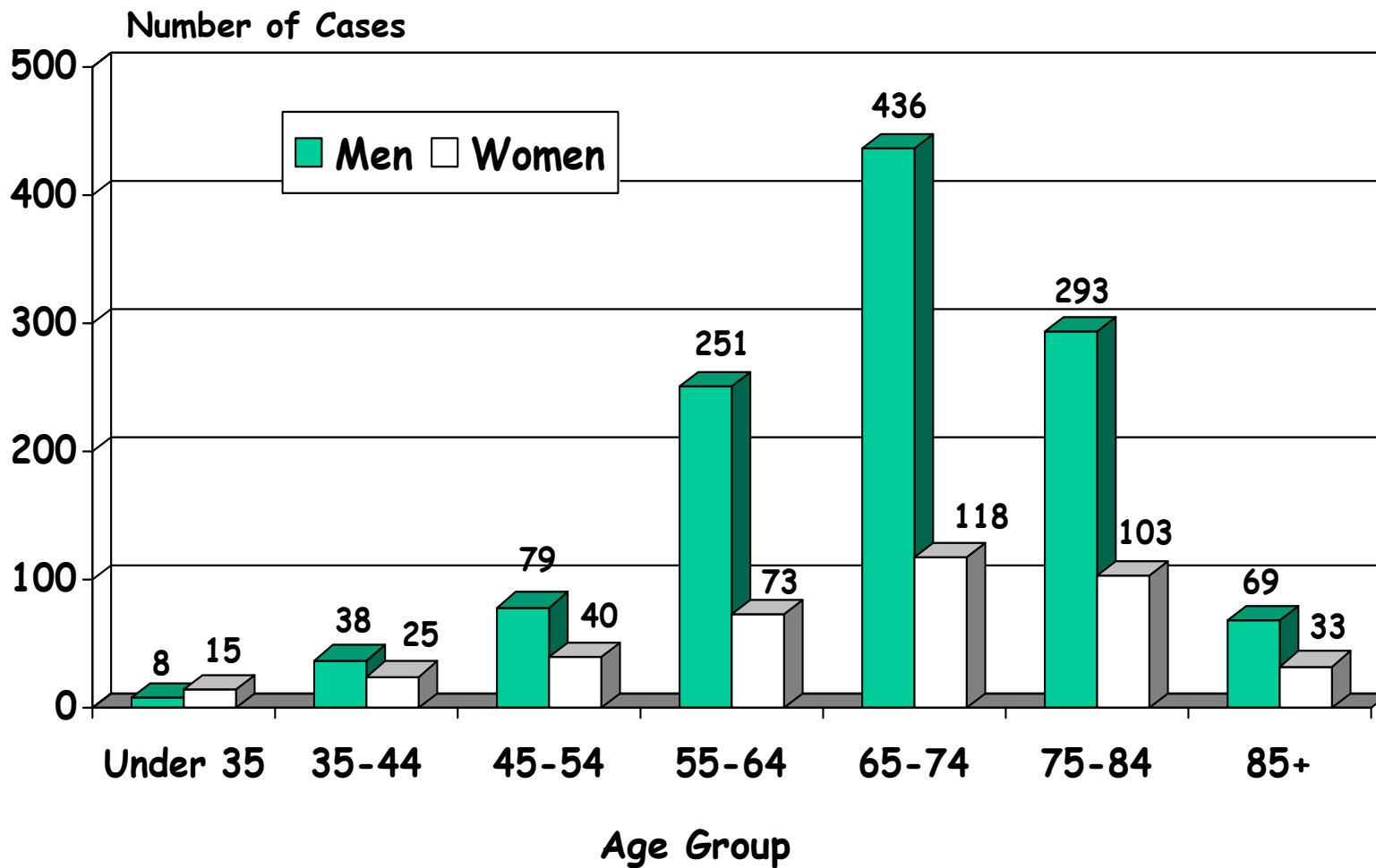


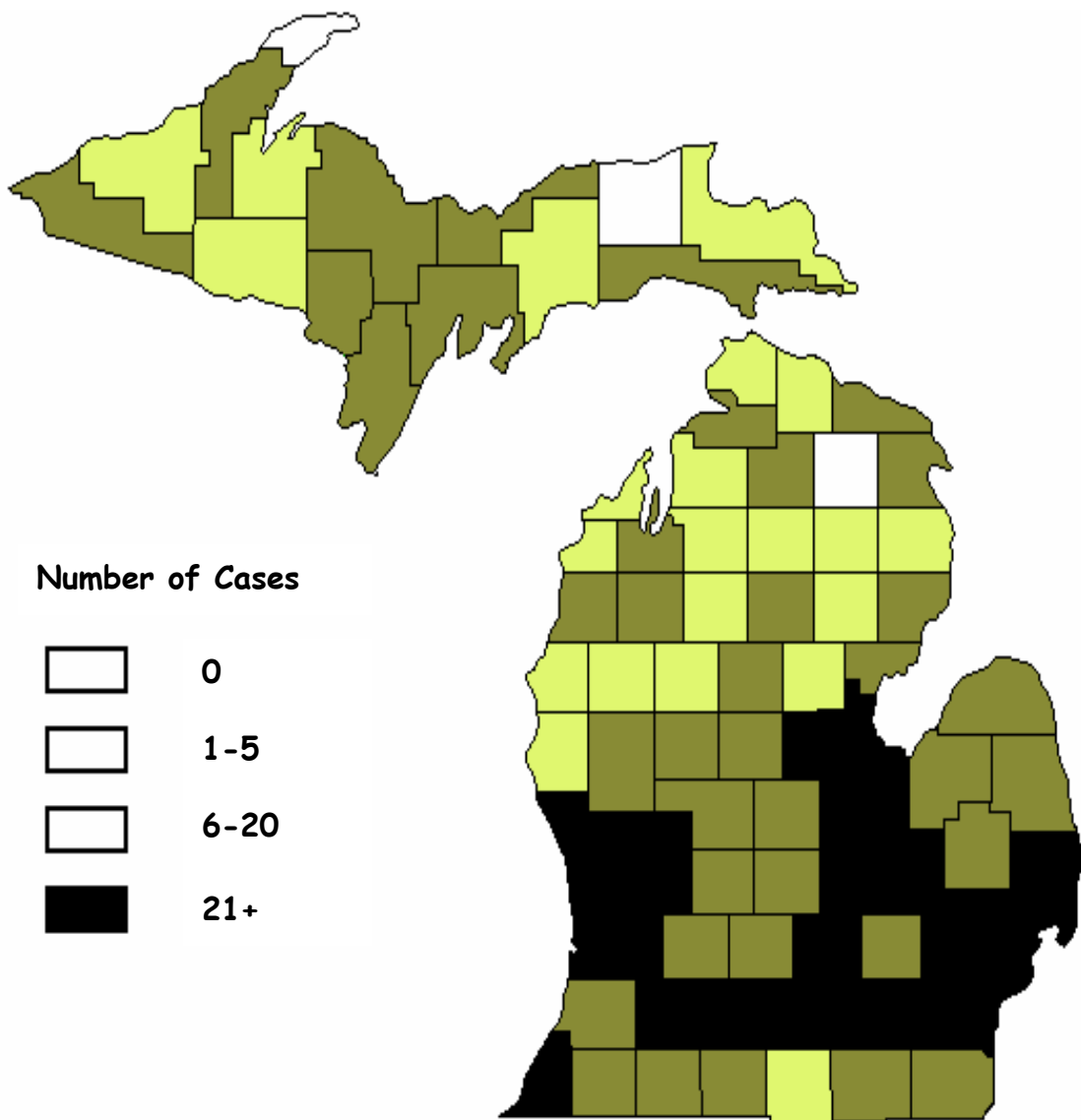
Figure 10. Cases of Mesothelioma in Michigan by Gender and Age at Diagnosis<sup>a</sup>: 1985-2002



<sup>a</sup>For one female, age at diagnosis was unknown.

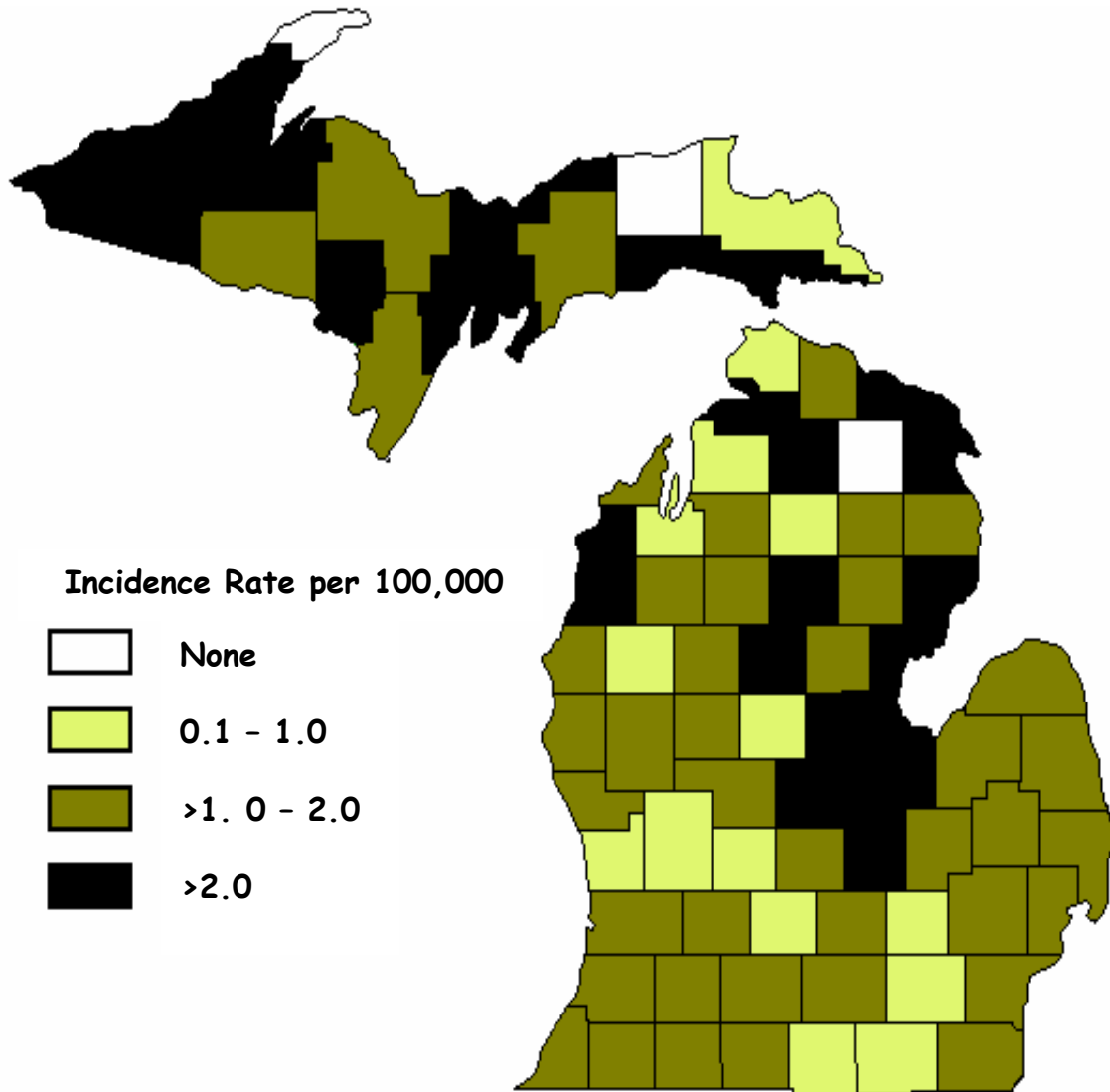


**Figure 11. Distribution of Michigan Residents Diagnosed with Mesothelioma by County: 1985-2002**



Total number of cases: 1,582.

**Figure 12. Average Annual Incidence Rates of Mesothelioma Among Michigan Residents, by County<sup>a</sup>**



<sup>a</sup>Numerator is the average number of Michigan residents by county, diagnosed with mesothelioma from 1985-2000 (most recent data available).  
Denominator is the estimated number of Michigan residents age 16+ by county, from the United States Census Bureau for July 1, 1993.

**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	81	8.2	64	0.7	145	1.5
25-100	178	18.1	34	0.4	212	2.2
100-500	145	14.8	262	3.1	407	4.3
>500	579	58.9	8,215	95.8	8,794	92.0
<b>Total</b>	<b>983<sup>a</sup></b>	100.0	<b>8,575<sup>b</sup></b>	100.0	<b>9,558</b>	100.0

<sup>a</sup> The number of employees was missing on 5,202 reports.

<sup>b</sup> The number of employees was missing on 345 reports.

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

Number of Reports	Health Practitioners		Number of Patients Represented
	Number	Percent	
1	264	82.0	264
2-5	37	11.5	99
6-10	5	1.6	40
11-20	4	1.2	53
21-100	7	2.2	213
101+	5	1.6	3,083
<b>Total<sup>a</sup></b>	<b>322</b>	<b>100.1<sup>b</sup></b>	<b>3,752</b>

<sup>a</sup> 816 reports were submitted by labs for lead poisoning, representing 255 clinicians. These are not included in the above statistics. 1,508 reports were submitted by Michigan's two Poison Control Centers, and are not included in the above statistics. In addition, 109 reports did not list physician name and are not included in the above statistics.

<sup>b</sup> Percent does not add to 100 due to rounding.

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

	<i>Number</i>	<i>Percent</i>
<b>AGE</b>		
≤19	140	1.0
20-24	469	3.5
25-29	784	5.8
30-34	1,262	9.3
35-39	1,350	10.0
40-44	1,325	9.8
45-49	1,991	14.7
50-54	1,869	13.8
55-59	1,423	10.5
60-69	1,488	11.0
70-79	1,029	7.6
80+	393	2.9
<b>Total</b>	<b>13,523<sup>a</sup></b>	
<b>GENDER</b>		
Male	9,088	68.2
Female	4,231	31.8
<b>Total</b>	<b>13,319<sup>b</sup></b>	
<b>RACE</b>		
Caucasian	2,036	67.9
African American	865	28.9
Hispanic	54	1.8
Other	43	1.4
<b>Total</b>	<b>2,998<sup>c</sup></b>	

<sup>a</sup>Age was missing on 1,582 reports. Mean age = 49± 15 years.

<sup>b</sup>Gender was missing on 1,786 reports.

<sup>c</sup>Race was missing on 12,107 reports.

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

DISEASE TYPE	Non-Company		Company		Total	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Infectious & Parasitic Diseases (ICD 001-139)	1	<0.1	62	0.7	63	0.4
Neoplasms (ICD 140-239)	70	1.1	3	<0.1	73	0.5
Diseases of Endocrine Glands (ICD 250-259)	0	--	1	<0.1	1	<0.1
Other Metabolic & Immunity Disorders (ICD 270-279)	0	--	1	<0.1	1	<0.1
Mental Disorders (ICD 290-319)	1	<0.1	181	2.0	182	1.2
Diseases of the Nervous System & Sense Organs (ICD 320-389)	445	7.2	1,808	20.3	2,253	14.9
Diseases of the Circulatory System (ICD 390-459)	1	<0.1	12	0.1	13	0.1
Diseases of the Respiratory System (ICD 460-519)	3,277	53.0	233	2.6	3,510	23.2
Diseases of the Digestive System (ICD 520-579)	1	<0.1	26	0.3	27	0.2
Diseases of the Genitourinary System (ICD 580-629)	0	--	1	<0.1	1	<0.1
Diseases of the Skin & Subcutaneous Tissue (ICD 680-709)	2	<0.1	348	3.9	350	2.3
Diseases of the Musculoskeletal System & Connective Tissue (ICD 710-739)	19	0.3	1,635	18.3	1,654	11.0
Symptoms, Signs & Ill-Defined Conditions (ICD 780-799)	27	0.4	257	2.9	284	1.9
Repetitive Trauma: Sprains & Strains (ICD 800-999 except ICD 940 & ICD 980-989)	12	0.2	4,277	47.9	4,289	28.4
Burn Confined to Eye (ICD 940)	0	--	34	0.4	34	0.2
Toxic Effects of Substances (ICD 980-989)	2,329	37.7	41	0.5	2,370	15.7
<b>Total</b>	<b>6,185</b>	<b>100.0</b>	<b>8,920</b>	<b>100.0</b>	<b>15,105</b>	<b>100.0</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 and Forestry Services</b> (SIC 01,02,07,08)	7	0.4	6	0.1	13	0.1
<b>Mining</b> (SIC 10-14)	4	0.2	18	0.2	22	0.2
<b>Construction</b> (SIC 15-17)	261	13.7	47	0.5	308	2.9
<b>Manufacturing</b> (SIC 20-39)						
Food and Kindred Products (SIC 20)	5	0.3	14	0.2	19	0.2
Printing and Publishing (SIC 27)	3	0.2	5	0.1	8	0.1
Chemicals and Allied Products (SIC 28)	16	0.8	129	1.4	145	1.3
Rubber and Misc. Plastics Products (SIC 30)	7	0.4	79	0.9	86	0.8
Stone, Clay, Glass & Concrete Products (SIC 32)	5	0.3	2	<0.1	7	0.1
Primary Metal Industries (SIC 33)	619	32.5	246	2.8	865	8.0
Fabricated Metal Products (SIC 34)	31	1.6	795	8.9	826	7.6
Industrial & Commercial Machinery & Computer Equipment (SIC 35)	25	1.3	137	1.5	162	1.5
Electronic Equipment and Components (SIC 36)	8	0.4	173	1.9	181	1.7
Transportation Equipment (SIC 37)	427	22.4	5,964	67.0	6,391	59.2
Miscellaneous Manufacturing (SIC 22,23,24,25,26,38,39)	25	1.3	36	0.4	61	0.6
<b>Transportation, Communications, Electric, Gas &amp; Sanitary Services</b> (SIC 40-49)	149	7.8	22	0.2	171	1.6
<b>Wholesale and Retail Trade</b> (SIC 50-59)	57	3.0	107	1.2	164	1.5
<b>Insurance &amp; Real Estate</b> (SIC 60-67)	9	0.5	10	0.1	19	0.2
<b>Services</b>						
Hospitals (SIC 80)	46	2.4	230	2.6	276	2.6
Schools (SIC 82)	47	2.5	161	1.8	208	1.9
Misc. (SIC 70,72,73,75,76,79,81,83,86,87,88)	81	4.3	241	2.7	322	3.0
<b>Public Administration</b> (SIC 90-97)	71	3.7	479	5.4	550	5.1
<b>Total</b>	<b>1,903</b>	<b>100.0</b>	<b>8,901</b>	<b>99.9<sup>a</sup></b>	<b>10,804<sup>b</sup></b>	<b>100.2<sup>a</sup></b>

<sup>a</sup>Percent does not add to 100 due to rounding.

<sup>b</sup>Type of industry was unknown in 4,282 non-company reports and 19 company reports.

**Table 6. Number of Occupational Disease Reports by Disease Type and Gender<sup>a</sup>**

DISEASE	MALES		FEMALES	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Infectious and Parasitic Diseases (ICD 001-139)	20	0.2	43	1.0
Neoplasms (ICD 140-239)	6	0.1	2	<0.1
Diseases of Endocrine Glands (ICD 250-259)	1	<0.1	0	--
Other Metabolic & Immunity Disorders (ICD 270-279)	1	<0.1	0	--
Mental Disorders (ICD 290-319)	81	0.9	96	2.3
Diseases of the Nervous System and Sense Organs (ICD 320-389)	1,720	18.9	531	12.6
Diseases of the Circulatory System (ICD 390-459)	11	0.1	2	<0.1
Diseases of the Respiratory System (ICD 460-519)	1,568	17.3	241	5.7
Diseases of the Digestive System (ICD 520-579)	24	0.3	3	0.1
Diseases of the Genitourinary System (ICD 580-629)	1	<0.1	0	--
Diseases of the Skin and Subcutaneous Tissue (ICD 680-709)	217	2.4	132	3.1
Diseases of the Musculoskeletal System and Connective Tissue (ICD 710-739)	929	10.2	718	17.0
Symptoms, Signs and Ill-Defined Conditions (ICD 780-799)	155	1.7	129	3.0
Repetitive Trauma Injuries (ICD 800-999 except ICD 940 and ICD 980-989)	2,633	29.0	1,651	39.0
Burn Confined to Eye (ICD 940)	30	0.3	4	0.1
Toxic Effects of Substances Chiefly Non-Medicinal (ICD 980-989)	1,691	18.6	679	16.0
<b>Total<sup>a</sup></b>	<b>9,088</b>	<b>100.0</b>	<b>4,231</b>	<b>100.0</b>

<sup>a</sup> Gender was missing on 1,786 reports.



**Table 7. Demographic Characteristics of Reported Occupational Disease Fatalities**

	<i>Number</i>	<i>Percent</i>
Fatal	89	0.6
Non-Fatal	15,016	99.4
<b>Total</b>	<b>15,105</b>	
<b>AGE</b>		
45-49	1	1.1
50-59	11	12.4
60-69	18	20.2
70-79	43	48.3
80+	16	18.0
<b>Total</b>	<b>89</b>	
<b>DIAGNOSIS</b>		
Neoplasms	53	59.6
Asbestosis	25	28.1
Mesothelioma	11	12.4
<b>Total</b>	<b>89</b>	
<b>INDUSTRY</b>		
Manufacturing	44	80.0
Railroad	1	1.8
Utilities	10	18.2
<b>Total</b>	<b>55<sup>a</sup></b>	

<sup>a</sup>Industry was missing on 34 reports.

**Table 8. Comparison of 2001 BLS Occupational Illness Survey Data and 2001 MDLEG Workers' Compensation (WC) Claims with 1992-2004 Occupational Disease Reports**

DISEASE CATEGORY																
	Occupational Skin Disease		Dust Diseases of the Lung		Respiratory Conditions Due to Toxic Agents		Poisoning		Disorders Due to Physical Agents		Disorders Due to Repeated Trauma		All Other Occupational Illnesses		No. of Reports per Year <sup>f</sup>	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%		
<b>MDLEG BLS Survey &amp; Workers' Compensation Claims</b>	#	%	#	%	#	%	#	%	#	%	#	%	#	%		
2001 BLS Survey <sup>b</sup>	3,300	10.4	100 <sup>e</sup>	0.3	1,200	3.8	200	0.6	1,200	3.8	23,200	73.2	2,500	7.9	31,700	
2001 WC Claims <sup>b</sup>	319	3.6	1	<0.1	145	1.6	54	0.6	37	0.4	2,941	33.0	5,405	60.7	8,902	
<b>MDLEG Occupational Disease Reports</b>	#	%	#	%	#	%	#	%	#	%	#	%	#	%		
1992-1993 <sup>a,c</sup>	776	6.1	914	7.2	290	2.3	207	1.6	469	3.7	7,151	56.0	2,972	23.3	12,779 <sup>d</sup>	
1994-1995 <sup>a,c</sup>	1,034	5.9	966	5.5	570	3.2	315	1.8	419	2.4	10,601	60.3	3,680	20.9	17,585	
1996-1997 <sup>a,c</sup>	1,405	7.3	1,159	6.0	799	4.1	631	3.3	414	2.1	11,293	58.3	3,668	18.9	19,369	
1998-1999 <sup>a</sup>	1,307	6.3	3,225	15.6	1,481	7.2	1,120	5.4	328	1.6	9,644	46.7	3,541	17.2	20,646	
2000-2001 <sup>a</sup>	953	5.1	1,165	6.3	2,334	12.5	1,246	6.7	231	1.2	9,068	48.7	3,639	19.5	18,636	
2002-2003 <sup>a</sup>	426	2.9	861	5.9	1,800	12.3	2,858	19.6	105	0.7	5,942	40.8	2,587	17.7	14,579	
2004	350	2.4	1,075	7.4	2,435	16.8	2,370	16.3	53	0.4	5,345	36.8	2,906	20.0	14,534	

<sup>a</sup>Number of reports per year (averaged over the 2 years). <sup>b</sup>Most recent year available. <sup>c</sup>Counts published in previous years' OD reports for 1992-1997 have been corrected here. <sup>d</sup>Type of occupational disease was missing for 97 reports. <sup>e</sup>This number is estimated since the BLS Annual Survey does not provide numbers for conditions with individual rates <0.05 per 100,000 full time workers. <sup>f</sup>Totals do not match those in Figure 2 due to the classification method for disease categories in this table.

**Table 9. Primary Diagnosis of Patients Hospitalized in Michigan from 1992-2003,  
Paid for by Workers' Compensation**

Primary Discharge Diagnosis (ICD-9 <sup>a</sup> )	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)
Infectious Diseases (001-139)	16 (0.2)	19 (0.3)	23 (0.3)	22 (0.4)	16 (0.3)	13 (0.2)	16 (0.3)	10 (0.2)	9 (0.2)	12 (0.2)	6 (0.1)	22 (0.4)
Neoplasms (140-239)	18 (0.3)	37 (0.5)	11 (0.2)	17 (0.3)	17 (0.3)	15 (0.3)	18 (0.3)	18 (0.3)	12 (0.2)	13 (0.3)	10 (0.2)	10 (0.2)
Endocrine Diseases (240-279)	24 (0.3)	26 (0.4)	22 (0.3)	19 (0.3)	15 (0.3)	10 (0.2)	20 (0.4)	17 (0.3)	18 (0.3)	13 (0.3)	19 (0.4)	15 (0.3)
Blood Diseases (280-289)	6 (0.1)	3 (<0.1)	5 (0.1)	2 (<0.1)	5 (0.1)	7 (0.1)	9 (0.2)	7 (0.1)	1 (<0.1)	1 (<0.1)	2 (<0.1)	3 (0.1)
Mental Disorders (290-319)	100 (1.5)	104 (1.4)	102 (1.4)	63 (1.1)	52 (0.9)	54 (1.0)	43 (0.8)	63 (1.2)	56 (1.1)	43 (0.9)	43 (0.9)	34 (0.7)
Nervous System Diseases (320-389)	192 (2.8)	167 (2.3)	168 (2.4)	130 (2.3)	91 (1.6)	103 (1.9)	77 (1.5)	55 (1.1)	57 (1.1)	51 (1.0)	52 (1.1)	59 (1.1)
Circulatory Diseases (390-459)	187 (2.7)	190 (2.6)	161 (2.3)	144 (2.5)	159 (2.8)	130 (2.3)	121 (2.3)	120 (2.3)	116 (2.2)	129 (2.6)	103 (2.1)	135 (2.6)
Respiratory Diseases (460-519)	68 (1.0)	104 (1.4)	73 (1.0)	76 (1.3)	76 (1.3)	70 (1.3)	61 (1.2)	71 (1.4)	57 (1.1)	62 (1.2)	68 (1.4)	86 (1.7)
Digestive Diseases (520-579)	135 (2.0)	159 (2.2)	133 (1.9)	113 (2.0)	98 (1.7)	108 (1.9)	94 (1.8)	104 (2.0)	81 (1.5)	83 (1.7)	84 (1.7)	93 (1.8)
Genitourinary Diseases (580-629)	53 (0.8)	71 (1.0)	35 (0.5)	42 (0.7)	43 (0.8)	31 (0.6)	25 (0.5)	23 (0.4)	24 (0.5)	23 (0.5)	26 (0.5)	31 (0.6)
Pregnancy Complications (630-676)	98 (1.4)	120 (1.6)	23 (0.3)	26 (0.5)	30 (0.5)	51 (0.9)	59 (1.1)	51 (1.0)	36 (0.7)	21 (0.4)	23 (0.5)	23 (0.4)
Skin Diseases (680-709)	183 (2.7)	190 (2.6)	244 (3.5)	211 (3.7)	195 (3.5)	193 (3.5)	176 (3.4)	189 (3.7)	196 (3.7)	158 (3.2)	155 (3.2)	179 (3.5)
Musculoskeletal Diseases (710-739)	2932 (42.5)	3127 (42.9)	2989 (42.3)	2386 (41.7)	2402 (42.7)	2313 (41.5)	2178 (42.0)	2096 (40.7)	2125 (40.3)	2172 (43.3)	2113 (43.9)	2030 (39.3)
Congenital Anomalies (740-759)	34 (0.5)	36 (0.5)	27 (0.4)	22 (0.4)	13 (0.2)	18 (0.3)	9 (0.2)	20 (0.4)	13 (0.2)	11 (0.2)	11 (0.2)	12 (0.2)
Perinatal Complications (760-779)	1 (<0.1)	1 (<0.1)	0 --	1 (<0.1)	0 --	1 (<0.1)	0 --	0 --	0 --	1 (<0.1)	0 --	0 --
Symptoms & Signs (780-799)	86 (1.2)	93 (1.3)	95 (1.3)	94 (1.6)	93 (1.7)	85 (1.5)	69 (1.3)	80 (1.6)	84 (1.6)	62 (1.2)	59 (1.2)	90 (1.7)
Injury & Poisoning (800-999)	2522 (36.6)	2585 (35.5)	2758 (39.1)	2292 (40.0)	2251 (40.0)	2273 (40.8)	2071 (40.0)	2094 (40.6)	2286 (43.3)	2056 (41.0)	1927 (40.1)	2093 (40.6)
V Codes	236 (3.4)	250 (3.4)	189 (2.7)	66 (1.2)	75 (1.3)	92 (1.7)	137 (2.6)	135 (2.6)	107 (2.0)	102 (2.0)	108 (2.2)	245 (4.7)
<b>Total<sup>b</sup></b>	<b>6891</b>	<b>7282</b>	<b>7058</b>	<b>5726</b>	<b>5631</b>	<b>5567</b>	<b>5183</b>	<b>5153</b>	<b>5278</b>	<b>5013</b>	<b>4809</b>	<b>5160</b>

<sup>a</sup>International Classification of Diseases, 9<sup>th</sup> Revision. <sup>b</sup>Totals vary due to missing information.

**Table 10. Demographic Characteristics of Patients Hospitalized in Michigan from 1992-2003, Paid for by Workers' Compensation**

	1992 <sup>a</sup>		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003	
	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)
<b>GENDER</b>																								
Male	5103	(74)	5388	(74)	5388	(76)	4387	(76)	4381	(78)	4205	(75)	3919	(76)	3907	(76)	4042	(77)	3797	(76)	3635	(76)	3427	(74)
Female	1792	(26)	1903	(26)	1675	(24)	1349	(24)	1253	(22)	1365	(25)	1267	(24)	1249	(24)	1235	(23)	1217	(24)	1174	(24)	1208	(26)
<b>Total</b>	<b>6895</b>		<b>7291</b>		<b>7063</b>		<b>5736</b>		<b>5634</b>		<b>5570</b>		<b>5186</b>		<b>5156</b>		<b>5277</b>		<b>5014</b>		<b>4809</b>		<b>4635</b>	
<b>RACE</b>																								
White	5173	(85)	5346	(86)	5179	(87)	3708	(85)	3355	(84)	3274	(85)	3016	(85)	2899	(85)	3036	(85)	2833	(85)	2697	(86)	2598	(85)
African American	519	(9)	515	(8)	544	(9)	417	(10)	425	(11)	378	(10)	387	(11)	323	(9)	366	(10)	335	(10)	276	(9)	324	(11)
Asian	11	(<1)	9	(<1)	10	(<1)	12	(<1)	7	(<1)	5	(<1)	14	(<1)	9	(<1)	16	(<1)	3	(<1)	9	(<1)	6	(<1)
American Indian	0	--	1	(<1)	2	(<1)	1	(<1)	2	(<1)	13	(<1)	13	(<1)	5	(<1)	7	(<1)	12	(<1)	8	(<1)	3	(<1)
Hispanic	32	(1)	37	(1)	41	(1)	49	(1)	37	(1)	26	(1)	41	(1)	51	(1)	40	(1)	51	(2)	63	(2)	66	(2)
Other	321	(5)	337	(5)	190	(3)	183	(4)	165	(4)	149	(4)	90	(3)	118	(3)	92	(3)	109	(3)	70	(2)	49	(2)
<b>Total</b>	<b>6056</b>		<b>6245</b>		<b>5966</b>		<b>4370</b>		<b>3991</b>		<b>3845</b>		<b>3561</b>		<b>3405</b>		<b>3557</b>		<b>3343</b>		<b>3123</b>		<b>3046</b>	
<b>AGE</b>																								
<15	57	(1)	45	(1)	41	(1)	7	(<1)	9	(<1)	10	(<1)	2	(<1)	6	(<1)	4	(<1)	8	(<1)	8	(<1)	16	(<1)
15-19	147	(2)	140	(2)	159	(2)	121	(2)	87	(2)	87	(2)	113	(2)	107	(2)	109	(2)	75	(2)	69	(1)	51	(1)
20-29	1248	(18)	1176	(16)	1104	(16)	903	(16)	810	(14)	801	(14)	722	(14)	725	(15)	666	(13)	629	(13)	540	(11)	537	(12)
30-39	2115	(31)	2157	(30)	2097	(30)	1684	(29)	1636	(29)	1597	(29)	1421	(28)	1358	(27)	1362	(26)	1224	(24)	1188	(25)	1102	(24)
40-49	1642	(24)	1820	(25)	1810	(26)	1531	(27)	1583	(28)	1618	(29)	1548	(30)	1513	(30)	1656	(32)	1556	(31)	1541	(32)	1446	(31)
50-59	1053	(15)	1205	(17)	1248	(18)	1034	(18)	1062	(19)	1017	(18)	934	(18)	884	(18)	1026	(20)	1084	(22)	1029	(21)	1005	(22)
60-69	417	(6)	466	(7)	440	(6)	360	(6)	351	(6)	329	(6)	306	(6)	309	(6)	343	(7)	331	(7)	314	(7)	361	(8)
70-79	92	(1)	113	(2)	104	(1)	68	(1)	74	(1)	73	(1)	78	(2)	85	(2)	75	(1)	77	(2)	85	(2)	97	(2)
80+	23	(<1)	40	(1)	37	(1)	10	(<1)	9	(<1)	12	(<1)	8	(<1)	12	(<1)	11	(<1)	15	(<1)	18	(<1)	20	(<1)
<b>Total</b>	<b>6794</b>		<b>7162</b>		<b>7040</b>		<b>5718</b>		<b>5621</b>		<b>5544</b>		<b>5132</b>		<b>4999</b>		<b>5252</b>		<b>4999</b>		<b>4792</b>		<b>4635</b>	
Avg. age, std. dev.	40	+13	41	+13	41	+12	41	+12	42	+12	42	+12	42	+12	42	+12	43	+12	43	+12	43	+12	44	+13

<sup>a</sup>Totals vary due to missing information.

**Table 11. Demographic Characteristics of 1,508  
Individuals Reported by the Two Michigan  
Poison Control Centers in 2004**

	<i>Number</i>	<i>Percent</i>
<b>AGE</b>		
<15	1	0.1
15-19	102	8.5
20-29	402	33.7
30-39	307	25.7
40-49	248	20.8
50-59	120	10.1
60-69	10	0.8
70-79	3	0.3
80+	1	0.1
<b>Total</b>	<b>1,194<sup>a</sup></b>	
<b>GENDER</b>		
Male	903	59.9
Female	605	40.1
<b>Total</b>	<b>1,508</b>	

<sup>a</sup>Age was missing on 314 reports.

## 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.

<u>ICD-9 Code</u>	<u>Description</u>
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