Summary of 1997 Occupational Disease Reports to the Michigan Department of Consumer & Industry Services

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INTRODUCTION

Since 1978, physicians, hospitals, clinics, other health professionals and employers have been required to report known or suspected cases of occupational diseases to the Michigan Department of Consumer & Industry Services^a (MDCIS) under Part 56 of P.A. of 1978. During the initial years after the reporting law was enacted, the number of reports received by the MDCIS was generally less than one hundred each year. Following the 1988 implementation of Project SENSOR^b, a statewide initiative for occupational disease surveillance, active solicitation of occupational disease (OD) reports began. In the last five years, the number of reports sent to the MDCIS has increased substantially. Figure 1 shows the number of occupational disease reports received each year since 1985. Figure 2 shows the number of reports by reporting source for 1991-1997 (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 seventh annual report on occupational diseases in Michigan, and is based upon the reports submitted to the MDCIS in 1997.

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.

^aEffective May 14, 1996, the Michigan Department of Public Health, Division of Occupational Health became part of the Bureau of Safety and Regulation within the newly created Department of Consumer & Industry Services. This division and its authority to collect occupational disease reports were transferred through executive orders 1996-1 and 1996-2.

^bSentinel 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)¹; 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)²; 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^a 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 this year.

RESULTS

A total of 20,313 occupational disease reports were submitted to the MDCIS in 1997. 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 1991-1996 is slightly less than was reported previously.

Source of Reports

Nearly eighty-five percent of the reports (17,172 cases) came from company or contract medical departments. The remaining fifteen percent (3141 cases) came from non-company health practitioners. Most patients worked in large companies (Table 1) with 98% of the 17,981 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. Fifteen percent of the 844 reports submitted by non-company practitioners involved companies with fewer than 500 employees, while only one percent of the 17,137 reports submitted by company practitioners involved facilities with fewer than 500 employees.

^aAppendix A lists the chronic disease categories for which duplicate reports within and across years are removed.

Four hundred thirty-eight private practice clinicians (non-company affiliated) reported 3,006 patients. Two hundred-eighty of these clinicians (64%) reported only one patient each (Table 2), while six 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 1997 ranged from 135 to 561.

Demographics

Table 3 shows the age, gender and race distribution of the workers with reported occupational diseases. The mean age of reported patients was 41.9 ± 12.8 years (range, 16 to 97 years) with the majority of patients (77%) between the ages of 25 and 55. Eighty-two reports were submitted for patients under age 20, and 117 were submitted for patients over age 80.

Sixty-eight percent of all reports submitted were for male workers. Ninety percent of the submitted reports (18,209 cases) did not indicate the worker's race. Of the 2,104 reports that did indicate race, 76% were white, 15% African American, 5% Hispanic and 4% were marked "other."

Younger workers. Of the 82 workers under age 20, the youngest three were 16 years old, four were 17, twenty were 18 and fifty-five were 19 years old. Twenty-seven of the reported patients under age 20 were women, and 55 were men.

Fifty of the younger workers were employed in automotive manufacturing, six worked for metal product manufacturers, three worked in food manufacturing, three in wholesale or retail trades, three in service industries, two in hospitals, one in industrial machine manufacturing, one in electronic equipment manufacturing, and one in construction. Place of employment was unknown for 12 of these workers.

Sixty of the younger workers were reported by company affiliated clinicians or contract medical departments, and twenty-two were reported by private-practice physicians. Thirty-eight reports were for repetitive trauma (sprains and strains), eleven for elevated lead levels, ten for skin diseases, seven for respiratory symptoms, five for musculoskeletal injuries, four for effects of toxic fumes, three for abrasions or contusions, two for eye injuries, one for heat related illness and one for hearing loss. No fatalities were reported for any workers under age 20. Of the eleven cases of elevated lead levels, eight had serum lead levels between 9 and 24 micrograms per deciliter, two had levels between 25 and 39 µgm/dl, and one had a lead level above 40 µgm/dl.

Older workers. Of the 103 workers over age eighty, 83 were between the ages of 81 and 89, and twenty were between 90 and 97 years old. Ninety-two were men and 9 were women (gender was not indicated in two reports). All but one of these patients were reported by non-company clinicians.

Sixty-four of the older workers were reported for dust-related lung disease (including 37 with

asbestosis and 22 with silicosis), 29 were reported for hearing loss, 4 for cancer, 4 for increased lead levels, one for an unspecified injury and one for an acute stress reaction.

Thirty-two of the older patients worked in (or were retired from) manufacturing, sixteen in utility services, one in construction, one in public administration and one was a school worker. Occupation or former occupation was not indicated in 52 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. All were male and ranged in age from 81 to 94. Four died from asbestosis, one from silicosis, two from lung or other respiratory cancer, and one from an unspecified cancer. Five of the deceased workers had been employed in automobile manufacturing and one had been a utility worker. Former occupation was not specified for the remaining two workers.

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 9,943 cases representing 49% of all OD reports submitted. The majority of reports were for sprains and strains of the wrist, hand and finger.

Diseases of the nervous system and sense organs (ICD-9 320-389) were the second most frequently reported conditions, with 2,430 cases representing 12% of all reports submitted. Diseases of the respiratory system were third, with 2,271 cases representing 11% of all reports. There were 1,902 reports of musculoskeletal and connective tissue disease (9%), 1,488 reports of skin and subcutaneous disease (7%), 750 reports for toxic effects of substances (4%), 642 reports for mental disorders (3%), 176 burns to the eye (1%), and 81 reports for cancer (<1%). Infrequently reported conditions included infectious and parasitic diseases and diseases of the digestive, circulatory and genitourinary systems.

Four hundred thirty-four 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 only one percent of submissions by non-company providers represent these diagnoses. Conversely, sixty-two percent of non-company submissions are reports of respiratory illness, while less than two 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 (8%).

Diseases of the nervous system and sense organs are also the second most frequently reported diagnoses by non-company providers (16%). The third and fourth most frequently reported diagnoses for non-company providers are toxic effects of substances (14%) and cancer (3%).

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 48% 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 insurance and real estate (<1%). The second and third industry types most frequently providers are wholesale and retail trade (34%) and construction (8%). The type of industry was missing on 1,445 reports.

Gender differences. Repetitive trauma illnesses were the most frequently reported diagnoses for both men and women, with 45% of submissions on men and 58% 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, (15%), nervous system and sense organs (14%) and musculoskeletal system and connective tissue (9%). For women, the second third and fourth most frequently submitted diagnoses were diseases of the musculoskeletal system and connective tissue (11%), skin and subcutaneous tissue (10%), and nervous system and sense organs (7%). Thirty-five reports did not indicate gender.

Fatalities. Eighty-eight reports of death related to occupational disease were submitted (Table 7). The youngest case was forty years and the oldest was ninety-four. The mean age of persons who died was 68.6 ± 9.8 years. All of the fatal cases were men and all but three died from lung related disease (57 from lung and other respiratory cancers, 21 from asbestosis and 5 from silicosis). The remaining three men died from unspecified cancers. Forty-one of the men who died had been employed in manufacturing industries, five were transportation or utility workers and one worked in the mining industry. Thirty-nine reports did not indicate the person's former occupation.

Industry type. Ninety-three percent of workers with a reported occupational disease were employed in manufacturing (Table 5). Of these, the vast majority (12,692) worked in automobile production facilities. Three percent were in wholesale and retail trade and three percent in service industries (including hospitals and schools). The type of industry in which the person worked was missing on 1,445 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 Bureau received 8,851 claims for compensation of occupational illnesses³.

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*⁴ 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 1992-1997.

Disorders due to repeated trauma constituted 56% of reports to the MDCIS in 1997, 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 1997 (1418 cases, 7% of reports) constituted a 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, so employers are unaware of their illness and do not file workers' compensation claims or report the cases when surveyed. Consequently, workers' compensation claims data and employer surveys underpredict dust diseases of the lung.

Hospital Discharge Data - Pneumoconiosis

Figure 4 shows the number of patients hospitalized in Michigan with asbestosis, coal workers' pneumoconiosis and silicosis from 1990-95. Repeat admissions of patients 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' compensation⁵.

Hospital Discharge Data - Workers' Compensation

Table 9 shows the primary discharge diagnosis for hospitalizations in 1992 through 1995 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.

Demographic characteristics of hospitalized workers' compensation patients are shown in Table 10. The number of patients in 1995 (the most recent year for which data are available) is lower than that reported in previous years (6,258 for 1995 versus 7,727 for 1994, 7,831 for 1993, and 7,328 for 1992). The proportion of patients in each demographic category are fairly consistent across the four years. Men constitute about 75% of the hospitalized patients. Among patients for whom race was listed, approximately 85% were white, 9% were African American, 1% were Hispanic, <1% were Asian or American Indian, and between 3% and 5% were listed as "other" over the four years.

The majority of patients were between thirty and fifty years old. Fewer than one percent were under age fifteen or over age 80. The number of hospitalized workers under age 15 in 1995 was significantly lower than reported in previous years (14 cases (0.2%) in 1995 versus 67 (0.9%) in 1994, 50 (0.6%) in 1993, and 62 (0.8%) in 1992).

DISCUSSION

There were 20,313 Occupational Disease Reports sent to the MDCIS in 1997. The most frequent types of occupational diseases reported to the MDCIS were repetitive trauma illnesses (49%), diseases of the nervous system and sense organs (12%), respiratory disease (11%), and diseases of the musculoskeletal system (9%).

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 214 companies and 438 non-company physicians. This is an increase from 1996 when we received reports from 180 companies and 321non-company physicians. There were an average of 223,221 companies and a total of 23,993 practicing physicians in Michigan in 1997. Accordingly, we are receiving reports from 0.1% of companies and 1.8% 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.⁶ 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. This assumption often goes unmet.

The percentage of reports received from non-company health practitioners as compared to employers is low (16%). 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 1997 were more likely to report patients with respiratory disease who work in small, non-manufacturing companies. A large percentage of the 1997 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 ⁶. To determine the true

burden of occupational disease in our state, multiple reporting sources must be used. Efforts to develop a comprehensive surveillance system 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.

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Figure 1. Occupational Disease Reports to the Michigan Department of Consumer & Industry Services 1985-1997^a



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lished in previous years' occupational disease reports for years 1991 through 1996 have been corrected in this report.

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Figure 2.

Occupational Disease Reports by Reporting Source: Non-Company Health Professionals and Company or Contract Medical Departments 1991-1997^a



^a Counts published in

previous years' OD reports for years 1991 through 1996 have been corrected in this report. * Reporting source was unknown for 25 reports.

Michigan Department of Consumer and Industry Services Known or Suspected Oc Unformation will be held on	cupationa midential as presor	I Disease Re	port	ivision of C	Occupational Healt		
EMPLOYE	E AFFECTED)					
Name (Last, First, Middle)	Age	Sex M F	Race:	White C Other	Black Hispanic		
Street		City		State	Zip		
Home Phone Number	Social S	ecurity Number					
CURRENT	EMPLOYER	2					
Current Employer Name	Worksite	e County					
Worksite Address		City		State	Zip		
Business Phone	If Known	n, Indicate Busines	s Type (produ	ucts manufa	tured or work done)		
Number of Employees <25 25-100 100-500 >500	_						
Employee's Work Unit/Department	Dates of	Employment From:		To:			
Employee's Job Title or Description of Work		Mo	Day Year	Mo	Day Year		
II INFECTIVE	COBLUTIO				t ser tog had		
Nature of Illness or Health Condition (Examples: Headache, Nausea, Difficulty	Breathing Co	N etc.)	Date of	Disensis			
and a second	oreaning, cor	age, entr	Date of	Mo Da	y Year		
Suspected Causative Agents (Chemicals, Physical Agents, Conditions)	Did Emp Yes	loyee Die?	If Yes, D	If Yes, Date of Death			
If Physician, Indicate Clinical Impression for Suspected Occupational Disease,	or Diagnosis of	Confirmed Occup	ational Disea	Mo Da	y Year		
ADDITIONA	L COMMEN	ITS					
REPORT SU Report Submitted by Non-Physician, Did Employee See & Physician	BMITTED B	Y					
If yes, record information below. Physician's Name		Yes No Phone	O Don	't Know 🤇	2		
Office Address		City	State	Zip			
Name of Person Submitting Report		Physician 🔿	Non-Phy	vsician (>		
Address		City	State	Zip			
Signature		Phone		Date			
The Michigan Department of Consumer and Industry Services Is an equ Return comp	al opportunity, affir leted form to:	mative action employer,	service provider	and buyer.			
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Number of Patients Discharged with Coal Workers' Pneumoconiosis, Asbestosis and Silicosis in Michigan in 1990-1995



Figure 5. Number of Days Hospitalized by Source of Payment for Coal Workers' Pneumoconiosis, Asbestosis and Silicosis in Michigan: 1990-1995





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

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

NUMBER OF	Reports f Com Practit	rom Non- pany tioners	Report Comp	ts from Danies	Total Reports			
EMPLOYEES	Number	Percent	Number	Percent	Number	Percent		
<25	25	3.0	6	< 0.1	31	0.2		
25-100	46	5.5	17	0.1	63	0.4		
100-500	51	6.0	141	0.8	192	1.1		
>500	722	85.5	16,973	99.0	17,695	98.4		
Total	844 ^a	100	17,137 ^b	100	17,981	100		

a The number of employees was missing on 2297 reports.

b The number of employees was missing on 35 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	280	280	63.9
2-5	104	272	23.7
6-10	30	223	6.8
11-20	9	122	2.1
21-40	4	102	0.9
41-100	5	293	1.1
101+	6	1714	1.4
Total	438	3006 ^a	100

a One report was submitted by a lab for lead poisoning; 110 reports were submitted by the Detroit-area court system for asbestos-related cases. These are not included in the above statistics.

Table 3. Demographic Characteristics of Reported Occupational Disease Cases

	Number of Reports	Percent of Reports
AGE		
<19	82	0.4
20-24	1397	7.2
25-29	2485	12.8
30-34	2023	10.4
35-39	2413	12.4
40-44	3231	16.6
45-49	2814	14.4
50-54	2088	10.7
55-59	1214	6.2
60-69	1175	6.0
70-79	451	2.3
80+	117	0.6
Total	19,490ª	100
GENDER		
Male	13,789	68.0
Female	6489	32.0
Total	20,278 ^b	100
RACE		
White	1602	76.1
African American	314	14.9
Hispanic	102	4.8
Other	86	4.1
Total	2104 ^c	100

a Age was missing on 823 reports.b Gender was missing on 35 reports.

c Race was missing on 18,209 reports.

Mean age = 41.9 ± 12.8 years.

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

	Non-Co	ompany	Com	pany	Total		
DISEASE TYPE	Number	Percent	Number	Percent	Number	Percent	
Infectious and Parasitic Diseases (ICD 001-139)	2	0.1	27	0.2	29	0.1	
Neoplasms (ICD140-239)	80	2.5	1	< 0.1	81	0.4	
Mental Disorders (ICD 290-319)	1	< 0.1	641	4.3	642	3.2	
Diseases of the Nervous System and Sense Organs (ICD 320-389)	493	15.7	1937	13.0	2430	12.0	
Diseases of the Circulatory System (ICD 390-459)	7	0.2	12	< 0.1	19	0.1	
Diseases of the Respiratory System (ICD 460-519)	1960	62.4	311	1.8	2271	11.2	
Diseases of the Digestive System (ICD 520-579)	0		26	0.2	26	0.1	
Diseases of the Genitourinary System (ICD 581-628)	0		1	< 0.1	1	< 0.1	
Diseases of the Skin and Subcutaneous Tissue (ICD 680-709)	43	1.4	1445	8.0	1488	7.3	
Diseases of the Musculoskeletal System and Connective Tissue (ICD 710-739)	35	1.1	1867	12.6	1902	9.4	
Symptoms, Signs and Ill-Defined Conditions (ICD 780-799)	44	1.4	390	2.5	434	2.1	
Repetitive Trauma: Sprains and Strains (ICD 800-999 except ICD 940 & ICD 980- 989)	34	1.1	9909	54.0	9943	48.9	
Burn Confined to Eye (ICD 940)	2	0.1	174	1.2	176	0.9	
Toxic Effects of Substances Chiefly Non-Medicinal (ICD 980-989)	440	14.0	431	2.1	871	4.3	
Total	3141	100	17,172	100	20,313	100	

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

	Non-Co	ompany	Company		Total	
INDUSTRY TYPE	Number	Percent	Number	Percent	Number	Percent
Agricultural Production or Services (SIC 01,02,07)	7	0.4	0		7	< 0.1
Mining (SIC 10-14)	17	1.0	11	0.1	28	0.1
Construction (SIC 15-17)	129	7.6	0		129	0.7
Manufacturing (SIC 20-39)						
Food and Kindred Products (SIC 20)	12	0.7	65	0.4	77	0.4
Paper and Allied Products (SIC 26)	6	0.4	0		6	< 0.1
Printing and Publishing (SIC 27)	7	0.4	0		7	< 0.1
Chemicals and Allied Products (SIC 28)	20	1.2	132	0.8	152	0.8
Rubber and Misc. Plastics Products (SIC 30)	26	1.5	495	2.9	521	2.8
Stone, Clay, Glass & Concrete Products (SIC 32)	7	0.4	75	0.4	82	0.4
Primary Metal Industries (SIC 33)	232	13.7	561	3.3	793	4.2
Fabricated Metal Products (SIC 34)	43	2.5	2284	13.3	2327	12.3
Industrial & Commercial Machinery & Computer Equipment (SIC 35)	36	2.1	90	0.5	126	0.7
Electronic Equipment and Components (SIC 36)	2	0.1	514	3.0	516	2.7
Transportation Equipment (SIC 37)	392	23.1	12,300	71.6	12,692	67.3
Miscellaneous Manufacturing (SIC 22, 24, 25, 29, 31, 38, 39)	16	0.9	107	0.6	123	0.7
Transportation, Communications, Electric, Gas & Sanitary Services (SIC 40-49)	571	33.6	2	<0.1	573	3.0
Wholesale and Retail Trade (SIC 50-59)	28	1.6	37	0.2	65	0.3
Insurance & Real Estate (SIC 60-67)	3	0.2	0		3	< 0.1
Services						
Hospitals (SIC 80)	54	3.2	473	2.8	527	2.8
Schools (SIC 82)	32	1.9	18	0.1	50	0.3
Misc. (SIC 70,73,75,76,83,87,89)	25	1.5	2	< 0.1	27	0.1
Public Administration (SIC 90-97)	34	2.0	3	< 0.1	37	0.2
Total	1699ª	100	17,169	100	18,868	100

a Type of industry was unknown in 1442 non-company reports and 3 company reports.

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

		Ma	les	Females		
	DISEASE	Number	Percent	Number	Percent	
	Infectious and Parasitic Diseases (ICD 001-139)	5	< 0.1	24	0.4	
	Neoplasms (ICD140-239)	81	0.6	0		
	Mental Disorders (ICD 290-319)	411	3.0	231	306	
	Diseases of the Nervous System and Sense Organs (ICD 320-389)	1968	14.3	458	7.1	
	Diseases of the Circulatory System (ICD 390-459)	13	0.1	6	0.1	
	Diseases of the Respiratory System (ICD 460-519)	2019	14.6	240	3.7	
	Diseases of the Digestive System (ICD 520-579)	23	0.2	3	0.1	
22	Diseases of the Genitourinary System (ICD 581-628)	1	<0.1	0		
	Diseases of the Skin and Subcutaneous Tissue (ICD 680-709)	818	5.9	669	10.3	
	Diseases of the Musculoskeletal System and Connective Tissue (ICD 710-739)	1181	8.6	717	11.0	
	Symptoms, Signs and Ill-Defined Conditions (ICD 780-799)	248	1.8	182	2.8	
	Repetitive Trauma Injuries (ICD 800-999 except ICD 940 and ICD 980-989)	6205	45.0	3728	57.5	
	Burn Confined to Eye (ICD 940)	154	1.1	22	0.3	
	Toxic Effects of Substances Chiefly Non-Medicinal (ICD 980-989)	662	4.8	209	3.2	
	Total ^a	13,789	100	6,489	100	

a Gender was missing on 35 reports.

	Number	Percent
Fatal	88	0.4
Non-Fatal	20,225	99.6
Total	20,313	100

Table 8. Comparison of 1990 MDCIS Workers' Disability Compensation Claims and 1994 Occupational Illness Survey Data with 1992-1997 Occupational Disease Reports

	MDCIS Survey & Compensation Claims				MDCIS Occupational Disease Reports ^a											
	1994 S	urvey ^b	1990 (Claims ^c	19	1992 1993		1994		1995		1996		1997		
DISEASE CATEGORY	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Occupational Skin Diseases or Disorders	6,336	12.2	372	4.2	629	5.6	923	6.1	1,103	5.7	965	5.7	1,353	6.8	1488	7.3
Dust Diseases of the Lung	186	0.4	12	0.1	1043	9.2	985	6.5	771	4.0	1,196	7.0	921	4.5	1418	7.0
Respiratory Conditions Due to Toxic Agents	2,590	5.0	87	1.0	219	1.9	362	2.4	557	2.9	584	3.4	754	3.7	853	4.2
Poisoning	765	1.5	403	4.6	195	1.7	218	1.4	328	1.7	302	1.8	511	2.5	750	3.7
Disorders Due to Physical Agents	1,944	3.7	80	0.9	523	4.6	413	2.7	432	2.2	406	2.4	463	2.3	367	1.8
Disorders Due to Repeated Trauma	36,994	71.0	3,425	38.7	5,853	51.8	8,453	55.8	11,465	59.4	9,741	57.3	12,115	59.5	11,272	55.5
All Other Occupational Illnesses	3,283	6.3	4,475	50.5	2,656	23.2	3,616	24.0	4,229	22.3	3,441	20.6	3,896	19.4	3,682	18.1
Total	52,098		8,851		11,208 ^d		15,154		19,286		16,990		20,355		20,313	

a Counts published in previous years' OD reports for 1992-1996 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 Type of occupational disease was missing on 97 reports.

Table 9. Primary Diagnosis of Workers' Compensation Patients Hospitalized in Michigan 1992 - 1995

	19	1992 1993 1994		94	1995			
PRIMARY DIAGNOSIS	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Infectious & Parasitic Diseases (001-139)	20	0.3	21	0.3	29	0.4	56	0.9
Neoplasms (140-239)	19	0.3	40	0.5	14	0.2	17	0.3
Endocrine, Nutritional, Metabolic Diseases & Immunity Disorders (240-279)	28	0.4	34	0.4	31	0.4	21	0.3
Diseases of the Blood & Blood Forming Organs (280-289)	8	0.1	7	0.1	5	0.1	4	0.1
Mental Disorders (290-319)	122	1.6	126	1.6	116	1.5	77	1.2
Diseases of the Nervous System & Sense Organs (320-389)	225	3.0	215	2.7	214	2.8	156	2.5
Diseases of the Circulatory System (390-459)	207	2.8	223	2.8	202	2.6	168	2.7
Diseases of the Respiratory System (460-519)	82	1.1	125	1.6	90	1.2	67	1.1
Diseases of the Digestive System (520-579)	147	2.0	186	2.3	154	2.0	123	2.0
Diseases of the Genitourinary System (580-629)	56	0.8	79	1.0	42	0.5	48	0.8
Complications of Pregnancy, Childbirth, & the Purpureum (630-676)	104	1.41	26	1.6	24	0.3	27	0.4
Diseases of the Skin & Subcutaneous Tissue (680-709)	198	2.7	199	2.5	267	3.5	231	3.7
Diseases of the Musculoskeletal System & Connective Tissue (710-739)	3137	42.2	3365	42.3	3187	41.3	2544	40.6
Congenital Anomalies (740-759)	38	0.5	36	0.5	27	0.3	22	0.4
Conditions Originating in the Perinatal Period (760-779)	1	<0.1	1	<0.1	1	<0.1	1	<0.1
Symptoms, Signs, and Ill-Defined Conditions (780-799)	96	1.3	105	1.3	112	1.5	105	1.7
Injury & Poisoning (800-999)	2669	35.9	2771	34.8	2964	38.4	2474	39.5
V Codes	275	3.7	296	3.7	243	3.1	123	2.0
Total	7432ª	100	7955 ^b	100	7722°	100	6264 ^d	100

a Principal diagnosis was unknown for 4 individuals.b Principal diagnosis was unknown for 10 individuals.

c Principal diagnosis was unknown for 5 individuals.
 d Principal diagnosis was unknown for 12 individuals.

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Table 10.Demographic Characteristics of Workers' Compensation Patients
Hospitalized in Michigan 1992 - 1995

	1992		1993		1994		1995		
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
GENDER									
Male	5496	73.9	5899	74.1	5881	76.1	4805	76.6	
Female	1940	26.1	2065	25.9	1846	23.9	1471	23.4	
Total	7436	100	7964ª	100	7727	100	6276	100	
RACE									
White	5577	85.4	5888	85.8	5679	87.0	4073	84.9	
African American	555	8.5	575	8.4	598	9.2	454	9.5	
Asian	11	0.2	9	0.1	10	0.2	18	0.4	
American Indian	0		1	< 0.1	2	< 0.1	1	< 0.1	
Hispanic	35	0.5	38	0.6	42	0.6	53	1.1	
Other	354	5.4	352	5.1	197	3.0	196	4.1	
Total	6532 ^b	100	6863°	100	6528 ^d	100	4795 ^e	100	
AGE									
<15	62	0.8	50	0.6	67	0.9	14	0.2	
15-19	154	2.1	147	1.9	172	2.2	125	2.0	
20-29	1338	18.3	1264	16.1	1192	15.4	970	15.5	
30-39	2273	31.0	2370	30.3	2276	29.5	1832	29.3	
40-49	1770	24.2	1990	25.4	1969	25.5	1683	26.9	
50-59	1148	15.7	1326	16.9	1387	18.0	1130	18.1	
60-69	458	6.3	515	6.6	500	6.5	411	6.6	
70-79	101	1.4	124	1.6	123	1.6	79	1.3	
80+	24	0.3	45	0.6	41	0.5	14	0.2	
Total	7328 ^f	100	7831 ^g	100.0	7727	100	6258 ^h	100	

a Gender was unknown for one individual.

e Race was unknown for 1481 individuals.

b Race was unknown for 904 individuals.c Race was unknown for 1102 individuals.

f Age was unknown for 108 individuals. g Age was unknown for 134 individuals.

c Race was unknown for 1102 individuals.d Race was unknown for 1199 individuals.

g Age was unknown for 134 individualsh Age was unknown for 18 individuals.

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.

ICD-9 Code	Description
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 and No S/T/U marked on ILO Form
515	Interstitial Lung Disease, Pulmonary Fibrosis
517	Sarcoidosis
520-579	Diseases of the Digestive System
580-629	Diseases of the Genitourinary System