

MICHIGAN DEPARTMENT OF COMMUNITY HEALTH

Michigan Occupational Injury and Disease Data

Introduction and Guide to the Data Tables

Nearly five million people work in Michigan. More than two hundred thousand experience a work-related illness or injury every year. On average about three people die every week of an acute work-related injury in Michigan. Additional deaths occur from work-related cancer and other chronic diseases. Workplace injuries and illnesses can be prevented. Successful approaches to making workplaces safer begin with having the data necessary to understand the problem. Data about work-related illnesses and injuries in Michigan are available in a variety of reports and publications. The tables presented on this web site summarize and consolidate key data from these reports starting in the early 1990's. They also provide web links to those reports so that the interested reader can obtain more in-depth information.

The data on the tables are derived from three surveillance systems: the federal Bureau of Labor Statistics ([BLS](#)) Census of Fatal Occupational Injuries ([CFOI](#)) which is conducted by the BLS in collaboration with the Michigan Department of Labor and Economic Growth ([DLEG](#)); the Survey of Occupational Injuries and Illnesses ([SOII](#)) also conducted by DLEG for the BLS, and public health reporting of occupational diseases ([OD](#)) mandated by the State Public Health Code (Article 368, Part 56, P.A. 1978, as amended).

The tables have links that allow the user to obtain additional information. The sources used to obtain the data are footnoted below the table: clicking on a data source will take the user to the description of the source. Clicking on data within the table will take the user to a published source report where there is detailed information about the surveillance methods and case definitions, and where the data are analyzed in more depth.

[Click here](#) for data tables on fatal occupational injuries from CFOI

[Click here](#) for data tables on non-fatal occupational injuries and illnesses from SOII

[Click here](#) for the data table of occupational diseases from the OD reporting system

For more information or comments about the site, contact Tom Largo, Epidemiologist, Michigan Department of Community Health at largot@michigan.gov or (517) 335-9647).

DESCRIPTIONS OF DATA SYSTEMS

Census of Fatal Occupational Injuries

The Census of Fatal Occupational Injuries (CFOI), conducted by the BLS in the U.S. Department of Labor, is a federal-state cooperative program that compiles an annual census of fatal occupational injuries at both the state and national levels. For a death to be counted, the decedent must have been working for pay, compensation or profit at the time of the event, engaged in a legal work activity, or present at the site of the incident as a requirement of his or her job. The data for Michigan represent fatal injuries occurring within Michigan. The census includes unintentional injuries (e.g., falls, electrocutions, motor vehicle crashes) and intentional injuries (homicide and suicide). Deaths due to occupational illnesses are excluded.

CFOI uses multiple data sources to identify and document work-related injury deaths. These sources include, among others, death certificates, workers' compensation records, reports to regulatory agencies, medical examiner and police reports, and reports in the news media. Multiple sources are used because studies have found that no single source captures all deaths. Two sources are required to verify each work-related death. Due to this methodology, CFOI counts are considered a complete or nearly complete ascertainment of work-related injury deaths. (Another source of information on occupational fatalities is the Michigan Fatality Assessment and Control Evaluation (MIFACE) program. [MIFACE](#) conducts investigations of each fatal work-related incident that occurs within Michigan. MIFACE annual reports, which began in 2001, include brief summaries of each fatal event. Copies of these summaries are available.)

Data Limitation

For confidentiality reasons, BLS does not publish the number of deaths when there are less than three cases in a category (e.g., males aged 55 and older).

Survey of Occupational Injuries and Illnesses

The Survey of Occupational Injuries and Illnesses (SOII), conducted by the Bureau of Labor Statistics (BLS) in the U.S. Department of Labor, provides annual estimates of the numbers and incidence rates of non-fatal work-related injuries and illnesses. Information is collected annually through a survey of a sample of establishments. Employers are asked to provide information on all work-related injuries and illnesses recorded as required under Occupational Safety and Health Administration ([OSHA](#)) record-keeping standard 29 CFR 1904. Recordable injuries and illnesses include those that result in loss of consciousness, one or more days away from work to recuperate, restricted work activity, transfer to another job, or medical treatment beyond simple first aid. More detailed information on worker demographics and the nature and circumstances of the injuries and illnesses is collected for cases resulting in one or more days away from work.

The SOII also collects data on the average number of workers employed and the total hours worked at each establishment, information that allows BLS to calculate rates.

Data Limitations

The SOII is based on a sample – not a census – of all establishments, thus the findings are estimates that have sampling errors. Because of BLS publication guidelines, results with statistically unreliable estimates are not published.

Several classifications of workers/employers are excluded from the survey, including the self-employed, farms with fewer than eleven employees, private households, federal agencies, and the military. According to the BLS Covered Wage and Employment Program, these workers comprise at least 20% of the workforce. Researchers have found that the SOII underreports injuries among employers within the scope of the survey. They estimate that overall, the survey misses between one-third and two-thirds of all work-related injuries (see: [An estimate of the U.S. Government's undercount of nonfatal occupational injuries](#)).

Occupational Disease (OD) Surveillance System

All healthcare providers, hospitals, clinics and employers are required by the Public Health Code (Act 368 of 1978) to report all known or suspected work-related illnesses to the Michigan Department of Labor and Economic Growth (DLEG). DLEG has contracted with Michigan State University (MSU) since 1986 to maintain the data system, which consists of 15,000 to 20,000 reported cases annually with a wide range of work-related diseases including infectious diseases, dermatitis, lung conditions and many others.

The MDCH state-wide Cancer Registry reports mesothelioma, a work-related cancer almost uniquely associated with exposure to asbestos, to the surveillance center at MSU under the authority of the Public Health Code. The Cancer Registry was established in 1985 when cancer became a reportable disease in Michigan.

Also under the authority of the Public Health Code, blood lead laboratory test results are reported by clinical laboratories to MDCH, and MDCH reports the adults, of whom about 90% have been exposed to lead at work, to the OD surveillance center at MSU.

There are five condition-specific, case-based surveillance systems that have been built on the OD data. The MSU surveillance center maintains systems for work-related asthma, silicosis, noise-induced hearing loss, and lead toxicity. Under a Memorandum of Understanding, MDCH maintains a case-based surveillance system for acute work-related pesticide illness/injury system using the OD reports. These systems involve identification of cases from one or more reporting sources and case follow-up through interviews and medical record reviews to confirm exposure and diagnosis. Activities to prevent additional exposure in co-workers are then conducted, usually by the Michigan Occupational Safety and Health Administration ([MIOSHA](#)) in DLEG.

Data Limitation

There is less than full compliance with reporting requirements, thus the number of cases identified by the OD reporting system is an undercount. The magnitude of this undercount is unknown.

Work-related Asthma Surveillance System

This system is a joint project of the Michigan Occupational Safety and Health Administration in the Michigan Department of Labor and Economic Growth and Michigan State University. There are several sources used to identify persons with work-related asthma: reports from healthcare providers (those in private practice and those working for industry); reports from hospitals; claims filed with the Bureau of Workers' Compensation; and Michigan's two Poison control centers. Authority to collect these data comes from the Occupational Disease reporting law within the Public Health Code. Reported individuals are administered a medical and work history questionnaire. Medical records are obtained and the agent associated with the worker's asthma is identified. Using this information, cases are confirmed using a published surveillance case definition. Worksites identified by case reports are referred to MIOSHA for on-site follow-up to identify if co-workers have respiratory symptoms and to ensure that other workers are not exposed to hazardous amounts of the agent that caused asthma in the index case.

Data Limitations

There is a lack of recognition by healthcare personnel of the occupational etiology of asthma. Also, a small percentage of healthcare providers comply with the reporting law. Both of these factors contribute to underreporting. Even when healthcare personnel do suspect a work-related cause of asthma, the diagnostic tests used often do not include specific testing with the suspected antigen, and consequently there is often uncertainty in identifying the causal agent.

Silicosis Surveillance System

This system is a joint project of the Michigan Occupational Safety and Health Administration in the Michigan Department of Labor and Economic Growth and Michigan State University. There are four sources used to identify persons with silicosis: reports from hospitals; reports from healthcare providers; death certificates; and claims awarded by the Michigan Silicosis, Dust Disease and Logging Industry Compensation Fund. Authority to collect these data comes from the Occupational Disease reporting law within the Public Health Code. Reported individuals are interviewed about their health, work history, and potential sources of exposure to silica. Medical records including the most recent chest x-ray are evaluated. Using this information, cases are confirmed using a published surveillance case definition. Worksites identified by case reports are referred to MIOSHA for on-site follow-up to ensure that other workers are not exposed to hazardous amounts of silica.

Data Limitation

Silicosis is a disease of long latency, thus there may be many years between the time of exposure and the onset of disease; these factors contribute to lack of recognition and reporting of silicosis.

Noise-induced Hearing Loss Surveillance System

This system is a joint project of the Michigan Occupational Safety and Health Administration in the Michigan Department of Labor and Economic Growth and Michigan State University. The sources used to identify persons with occupational noise-induced hearing loss include reports from audiologists and otolaryngologists in private practice, and reports from company medical departments. (Companies with noise levels that exceed MIOSHA standards are required to have hearing conservation programs that include audiometric testing.) Individuals reported are administered a medical and work history questionnaire, including details on their occupational and recreational exposures to noise; audiograms are also obtained. This information is used to confirm cases using a case definition developed by the medical advisory board to this project. Selected worksites identified by case reports are referred to MIOSHA for on-site follow-up to ensure that other workers are not exposed to hazardous levels of noise.

Data Limitations

There is less than full compliance with reporting requirements, thus the number of cases identified is an undercount. The magnitude of this undercount is unknown. Audiograms are only available for cases reported since January 1, 2003.

Adult Blood Lead Epidemiology and Surveillance (ABLES) System

Since 1997, Michigan law has required laboratories to report all blood lead results to the Michigan Department of Community Health, which does data entry and follow-up on children and provides data on adults to the Michigan Department of Labor and Economic Growth (DLEG) under the authority of the Occupational Disease reporting law in the Public Health Code. Michigan State University, under contract with DLEG, administers the adult (age 16 or older) lead surveillance system by maintaining a database and conducting follow-up. Over 90% of adults tested for lead are tested because of occupational exposure to lead; blood lead monitoring of lead-exposed workers is required by MIOSHA standards. Selected individuals with blood lead levels above normal [10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) or greater] are interviewed to determine sources of exposure to lead at work (and outside of work), symptoms related to lead exposure, patient demographic data, and the presence of young children in the household to assess possible take-home lead exposures among these children. Worksites identified by case reports are referred to MIOSHA for on-site followup to minimize exposure to all workers at the facility.

Data Limitation

The ABLES system will not identify individuals exposed to lead who do not have their blood tested for lead.

Pesticide Poisoning Surveillance System

This system is a joint project of the Michigan Department of Community Health, the Michigan Department of Labor and Economic Growth, and Michigan State University. The sources used to identify persons with work-related pesticide illness/injury include Occupational Disease (OD) reports to the Michigan Department of Labor and Economic Growth, reports to the state's two poison control centers, and reports to the Michigan Department of Agriculture's pesticide misuse complaint system. Authority to collect these data comes from the OD reporting law within the Public Health Code. Reported individuals are interviewed about their health, work history, and source of exposure to pesticides. Medical records are obtained. Using this information, cases are confirmed using a published surveillance case definition. Worksites identified by case reports are referred to the [Michigan Department of Agriculture](#) and/or MIOSHA for a site follow-up to ensure that other workers are not at risk of exposure to pesticides.

Data Limitations

There is a lack of recognition by healthcare personnel of the adverse health effects of pesticides. There is less than full compliance with reporting requirements, thus the number of cases identified is an undercount. The magnitude of this undercount is unknown.

Table 1
Number of Fatal Occupational Injuries in Michigan
by Cause of Injury and Year of Death

Cause of Injury Death	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004^p
Transportation	44	61	59	56	57	61	53	61	50	64	47	58	45
<i>Highway & non-highway traffic crash</i>	28	42	38	47	43	28	36	48	33	45	34	46	30
<i>Pedestrian struck by vehicle/mobile equipment</i>	11	13	16	5	13	19	12	7	12	9	7	9	9
<i>Aircraft</i>	--	3	3	--	--	12	3	4	5	5	5	--	--
Fall	20	8	10	14	22	23	21	24	20	23	19	17	14
<i>From roof</i>	--	3	4	4	4	8	6	7	7	4	6	3	--
<i>From ladder</i>	4	--	--	4	4	4	5	5	--	--	5	--	--
Electrocution	16	12	14	9	4	8	14	10	9	4	8	10	7
Fire/Explosion	4	--	4	--	4	10	15	18	6	7	5	3	3
Struck by Object	9	18	24	16	14	13	14	11	25	15	17	19	10
Caught in running equipment or machinery	4	4	5	9	6	11	6	12	10	9	6	4	6
Homicide	26	25	39	23	29	26	22	20	13	24	22	14	22
Suicide	8	12	10	7	7	6	10	6	12	13	11	5	4
Other Cause	12	unk	15	unk	12	16	24	20	11	16	17	22	15
Total	143	160	180	149	155	174	179	182	156	175	152	152	126

-- less than three deaths

unk could not be determined due to unknown number of Fire/Explosion deaths

p preliminary

Source: [BLS Census of Fatal Occupational Injuries](#)

1992 – 2002 data not available on BLS website; data can be obtained via CD-ROM (request from BLS at iifstaff@bls.gov.)

Table 2
Rate of Fatal Occupational Injuries in Michigan
by Cause of Injury and Year of Death

Cause of Injury Death	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004 ^P
Transportation	1.0	1.4	1.3	1.2	1.2	1.3	1.1	1.2	1.0	1.3	1.0	1.2	0.9
<i>Highway & non-highway traffic crash</i>	0.7	1.0	0.8	1.0	0.9	0.6	0.7	1.0	0.7	0.9	0.7	1.0	0.6
<i>Pedestrian struck by vehicle/mobile equipment</i>	0.3	0.3	0.4	--	0.3	0.4	0.2	0.1	0.2	0.2	0.1	0.2	0.2
<i>Aircraft</i>	--	--	--	--	--	0.3	--	--	--	--	--	unk	unk
Fall	0.5	0.2	0.2	0.3	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.4	0.3
<i>From roof</i>	--	--	--	--	--	0.2	0.1	0.1	0.1	--	0.1	--	unk
<i>From ladder</i>	--	--	--	--	--	--	--	--	--	--	--	unk	unk
Electrocution	0.4	0.3	0.3	0.2	--	0.2	0.3	0.2	0.2	--	0.2	0.2	0.1
Fire/Explosion	--	--	--	--	--	0.2	0.3	0.4	0.1	0.1	--	--	--
Struck by Object	0.2	0.4	0.5	0.4	0.3	0.3	0.3	0.2	0.5	0.3	0.4	0.4	0.2
Caught in running equipment or machinery	--	--	--	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	--	0.1
Homicide	0.6	0.6	0.9	0.5	0.6	0.5	0.5	0.4	0.3	0.5	0.5	0.3	0.5
Suicide	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.3	0.2	--	--
Other Cause	0.3	unk	0.3	unk	0.3	0.3	0.5	0.4	0.2	0.3	0.4	0.5	0.3
Total	3.3	3.6	4.0	3.3	3.3	3.6	3.7	3.7	3.1	3.6	3.2	3.3	2.6

Rates are the number of deaths per 100,000 workers.

-- rates not calculated for causes with less than six deaths

unk rate could not be calculated because number of deaths was unknown

p preliminary data

Sources: [BLS Census of Fatal Occupational Injuries](#)
[BLS Geographic Profiles](#) (provided number of workers to allow calculation of rates)

Table 3
Estimated Number of Non-fatal Occupational Injuries
Reported by Michigan Private Sector and State Government
Employer Type by Year of Incident

Employer Type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Private Sector	261,200	270,500	286,800	287,300	284,300	260,100	245,600	234,100	225,800	196,700	180,400	168,600
State Government	6,500	6,400	6,500	4,900	6,200	5,800	5,000	5,400	5,800	5,600	5,500	4,900
Total ¹	287,400	303,100	319,300	315,500	312,900	292,000	274,600	259,300	252,600	226,300	210,100	195,200

1. Total includes reports from local government.

Source: [BLS Annual Survey of Occupational Injuries and Illnesses](#)

FYI, 1992-1995, 2002, 2003: data not available on web. Data can be obtained via CD-ROM. To order, e-mail BLS at iifstaff@bls.gov and ask to have the CD-ROM titled "Occupational Injuries and Illnesses in the United States Profile Data" mailed to you.

Table 4
Estimated Rate of Non-fatal Occupational Injuries
Reported by Michigan Private Sector and State Government
Employer Type by Year of Incident

Employer Type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Private Sector	9.7	9.5	9.8	9.5	9.2	8.0	7.5	7.0	7.0	6.4	6.1	5.8
State Government	6.0	5.2	5.0	4.2	4.6	3.9	3.6	3.8	4.1	3.8	4.1	3.7
Total ¹	9.4	9.3	9.6	9.2	8.9	7.9	7.4	6.9	6.8	6.4	6.2	5.8

1. Total includes reports from local government.

Rates are number of persons injured per 100 full time workers.

Source: [BLS Annual Survey of Occupational Injuries and Illnesses](#)

FYI, 1992-1995, 2002, 2003: data not available on web. Data can be obtained via CD-ROM. To order, e-mail BLS at iifstaff@bls.gov and ask to have the CD-ROM titled "Occupational Injuries and Illnesses in the United States Profile Data" mailed to you.

Table 5
Estimated Number of Non-fatal Occupational Injuries and Illnesses
Resulting in Days Away from Work
Reported by Michigan Private Sector Employers
Selected Causes by Year of Incident

Cause of Injury/Illness	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Struck by/against object	16,801	15,897	17,344	16,329	15,514	13,812	11,393	11,625	11,348	9,803	8,775	7,390
Caught in/compressed by equipment/objects	3,603	3,397	3,360	2,894	2,727	2,767	2,424	2,042	2,208	1,865	1,737	2,100
Fall to lower level	3,791	4,244	3,287	3,535	3,624	3,771	2,943	3,123	2,920	2,681	3,594	3,050
Fall on same level	7,246	6,927	6,981	6,847	7,022	7,162	5,705	5,446	5,420	5,213	4,896	5,180
Bending/climbing/crawling/reaching/twisting	2,958	3,095	3,909	3,769	3,056	2,286	2,521	2,313	2,135	1,989	1,921	1,800
Overexertion	23,889	23,948	24,215	23,421	20,912	17,844	16,673	15,892	16,663	13,258	12,532	11,550
Repetitive motion	4,989	5,638	6,506	5,879	5,037	4,790	4,007	4,694	3,822	3,373	2,656	3,110
Exposure to caustic/noxious/allergenic substances	1,813	1,656	2,247	1,952	1,191	1,355	1,649	1,612	1,319	1,465	968	690
Highway & non-highway traffic crash	1,695	1,523	1,851	1,767	1,396	1,147	1,415	1,677	1,389	904	1,255	1,020
Pedestrian struck by vehicle/mobile equipment	336	630	631	516	429	412	540	663	505	250	404	460
Assault	761	783	764	903	439	834	423	567	457	605	478	310
Other Causes	13,790	13,201	15,520	16,093	13,401	12,688	10,674	9,857	11,341	8,518	9,586	8,040
All Causes	81,672	80,939	86,615	83,905	74,748	68,868	60,367	59,511	59,527	49,924	48,802	44,700

Source: [BLS Annual Survey of Occupational Injuries and Illnesses](#)

Data were obtained from a BLS CD-ROM. To order, e-mail BLS at iifstaff@bls.gov and ask to have the CD-ROM titled "Occupational Injuries and Illnesses in the United States Profile Data" mailed to you.

Table 6
Estimated Rate of Non-fatal Occupational Injuries and Illnesses
Resulting in Days Away from Work
Reported by Michigan Private Sector Employers
Selected Causes by Year of Incident

Cause of Injury/Illness	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Struck by/against object	62.1	55.6	59.2	53.8	50.2	42.2	34.8	34.8	35.1	31.7	29.6	25.3
Caught in/compressed by equipment/objects	13.3	11.9	11.5	9.5	8.8	8.5	7.4	6.1	6.8	6.0	5.9	7.2
Fall to lower level	14.0	14.9	11.2	11.7	11.7	11.5	9.0	9.4	9.0	8.7	12.1	10.5
Fall on same level	26.8	24.2	23.8	22.6	22.7	21.9	17.4	16.3	16.8	16.8	16.5	17.8
Bending/climbing/crawling/reaching/twisting	10.9	10.8	13.3	12.4	9.9	7.0	7.7	6.9	6.6	6.4	6.5	6.2
Overexertion	88.3	83.8	82.7	77.2	67.6	54.6	50.9	47.6	51.5	42.8	42.3	39.6
Repetitive motion	18.4	19.7	22.2	19.4	16.3	14.6	12.2	14.1	11.8	10.9	9.0	10.7
Exposure to caustic/noxious/allergenic substances	6.7	5.8	7.7	6.4	3.9	4.1	5.0	4.8	4.1	4.7	3.3	2.4
Highway & non-highway traffic crash	6.3	5.3	6.3	5.8	4.5	3.5	4.3	5.0	4.3	2.9	4.2	3.5
Pedestrian struck by vehicle/mobile equipment	1.2	2.2	2.2	1.7	1.4	1.3	1.7	2.0	1.6	0.8	1.4	1.6
Assault	2.8	2.7	2.6	3.0	1.4	2.6	1.3	1.7	1.4	2.0	1.6	1.1
Other Causes	51.1	46.3	53.0	53.1	43.3	38.8	32.6	29.5	35.0	27.6	32.2	27.4
All Causes	301.9	283.2	295.7	276.6	241.7	210.6	184.3	178.2	184.0	161.3	164.6	153.3

Rates are number of persons injured per 10,000 full time workers.

Source: [BLS Annual Survey of Occupational Injuries and Illnesses](#)

Data were obtained from a BLS CD-ROM. To order, e-mail BLS at iifstaff@bls.gov and ask to have the CD-ROM titled "Occupational Injuries and Illnesses in the United States Profile Data" mailed to you.

Table 7
Estimated Number of Non-fatal Occupational Injuries and Illnesses
Resulting in Days Away from Work
Reported by Michigan State Government
Selected Causes by Year of Incident

Cause of Injury/Illness	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Struck by/against object	390	286	360	198	318	278	308	220	191	163	193	180
Caught in/compressed by equipment/objects	42	21	30	35	30	77	--	50	25	26	17	--
Fall to lower level	118	142	147	137	124	143	121	133	74	135	109	80
Fall on same level	488	432	399	219	244	335	331	238	194	265	161	270
Bending/climbing/crawling/reaching/twisting	114	79	110	93	42	59	77	39	57	62	38	60
Overexertion	725	825	700	462	575	509	367	475	303	320	354	360
Repetitive motion	62	97	104	59	75	122	78	58	77	103	44	80
Exposure to caustic/noxious/allergenic substances	48	52	60	49	51	40	52	12	46	--	16	50
Highway & non-highway traffic crash	--	136	--	54	181	112	24	53	--	--	--	--
Pedestrian struck by vehicle/mobile equipment	--	23	--	--	30	30	--	--	--	25	--	--
Assault	659	572	557	307	420	305	293	331	364	639	204	270
All Causes	3,126	3,205	3,029	2,079	2,517	2,451	2,115	2,122	1,705	2,168	1,475	1,610

-- number of cases did not meet BLS publication guidelines

Source: [BLS Annual Survey of Occupational Injuries and Illnesses](#)

Data were obtained from a BLS CD-ROM. To order, e-mail BLS at iifstaff@bls.gov and ask to have the CD-ROM titled "Occupational Injuries and Illnesses in the United States Profile Data" mailed to you.

Table 8
Estimated Rate of Non-fatal Occupational Injuries and Illnesses
Resulting in Days Away from Work
Reported by Michigan State Government
Selected Causes by Year of Incident

Cause of Injury/Illness	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Struck by/against object	36.2	23.1	27.6	17.0	23.2	18.7	22.1	15.7	13.5	11.1	14.6	13.6
Caught in/compressed by equipment/objects	3.9	1.7	2.3	3.0	2.2	5.2	--	3.6	1.8	1.8	1.3	--
Fall to lower level	10.9	11.5	11.3	11.7	9.1	9.6	8.7	9.5	5.2	9.2	8.2	6.0
Fall on same level	45.3	34.9	30.6	18.9	17.8	22.6	23.8	17.0	13.7	18.0	12.2	20.3
Bending/climbing/crawling/reaching/twisting	10.6	6.4	8.5	8.0	3.1	4.0	5.5	2.8	4.0	4.2	2.9	4.5
Overexertion	67.4	66.6	53.8	39.7	42.0	34.3	26.4	33.9	21.3	21.7	26.7	27.1
Repetitive motion	5.8	7.9	7.9	5.1	5.5	8.2	5.6	4.1	5.4	7.0	3.3	6.0
Exposure to caustic/noxious/allergenic substances	4.5	4.2	4.6	4.2	3.7	2.7	3.7	0.8	3.3	--	1.2	3.8
Highway & non-highway traffic crash	--	11.0	--	4.6	13.2	7.6	1.7	3.8	--	--	--	--
Pedestrian struck by vehicle/mobile equipment	--	1.9	--	--	2.2	2.0	--	--	--	1.7	--	--
Assault	61.2	46.2	42.7	26.4	30.7	20.6	21.1	23.7	25.7	43.4	15.4	20.3
All Causes	290.4	258.7	232.6	178.8	183.9	165.3	152.0	151.7	120.2	147.3	111.3	121.3

-- number of cases did not meet BLS publication guidelines

Rates are number of persons injured per 10,000 full time workers.

Source: [BLS Annual Survey of Occupational Injuries and Illnesses](#)

Data were obtained from a BLS CD-ROM. To order, e-mail BLS at iifstaff@bls.gov and ask to have the CD-ROM titled "Occupational Injuries and Illnesses in the United States Profile Data" mailed to you.

Table 9
Number of Reports of Incident Occupational Diseases Among Michigan Workers, by Year Reported
(hyperlinks in red font indicate reports that present county-level data)

Disease	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Infectious and Parasitic Diseases ¹	6	5	6	13	19	24	29	24	29	11	28	20	19	63	18 ^c
Cancer ^a															
Mesothelioma ^{2,b}	69	82	115	95	112	93	103	96	112	136	114	116	116	---	---
Lung Cancer ¹	31	41	34	37	0	53	50	32	26	56	17	17	31	38	36 ^c
Other Cancers ¹	17	18	18	13	0	10	9	5	10	16	6	11	8	4	24 ^c
Non-cancerous Respiratory Diseases															
Asthma ³	115	150	176	152	127	155	162	147	141	164	139	143	133^c	112^c	---
Asbestosis ¹	909	981	756	619	1,055	805	1,328	2,858	3,384	906	1,260	677	883	1,008	1,061 ^c
Pleural Thickening ¹	54	3	42	150	161	189	357	965	1,564	1,716	2,397	1,269	1,847	1,976	488 ^c
Silicosis ⁴	48	78	42	72	66	63	62	39	32	34	21	34	28^c	2^c	---
Other Pneumoconioses ¹	5	6	13	67	33	44	6	1	2	5	3	9	3	5	4 ^c
Other Non-cancerous Respiratory Diseases ¹	165	187	392	340	372	477	510	441	424	462	375	382	158	490	---
Acute Reaction to Stress ¹	50	73	113	290	420	518	506	491	483	461	400	39	49	165	89 ^c
Noise-induced hearing loss ⁵	800	1,430	1,949	1,990	1,719	1,995	1,797	1,630	2,119	2,254	2,099	1,179	1,245	1,551	---
Diseases of the Skin and Subcutaneous Tissue ¹	674	629	927	1,105	969	1,353	1,488	1,388	1,226	1,129	776	502	350	350	---
Disorders due to Repetitive Motion															
Carpal Tunnel Syndrome ¹	485	474	535	1,003	574	644	566	551	514	573	462	313	1,469	647	620 ^c
Musculoskeletal System Disorders ¹	2,835	2,727	3,037	3,534	2,879	2,559	1,897	1,688	1,463	1,591	1,262	938	1,864	1,654	1,363 ^c
Sprains/Strains ¹	1,482	3,126	5,413	7,929	6,861	7,388	7,494	7,459	7,293	7,674	6,445	5,122	3,591	3,691	3,479 ^c
Repeated Trauma, Unspecified Disorder ¹	---	---	---	---	---	2,167	1,082	696	689	712	452	274	94	0	0 ^c
Pesticide poisoning ⁶	---	---	---	---	---	---	---	---	---	---	18 ^d	39	71	88	68 ^c
Elevated blood lead levels (prevalence) ⁷															
≥10 ug/dl	---	---	---	---	---	---	---	918^c	994^c	1,019^c	835^c	973^c	952^c	816	---
≥25 ug/dl	---	---	---	---	---	---	---	298^c	272^c	238^c	208	195^c	173^c	155	---

--- data are not available

a. all cancer data represent year of diagnosis

b. mesothelioma data represent MI residents

c. provisional data

d. data represent last six months of 2001 only

e. data have been revised since publication; this figure does not match published figure

Sources:

1. [Occupational Disease Reports](#)

2. [Cancer Registry](#)

3. [Work-related Asthma Surveillance System](#)

4. [Silicosis Surveillance System](#)

5. [Noise-induced Hearing Loss Surveillance System](#)

6. [Pesticide Poisoning Surveillance System](#)

7. [Adult Blood Lead Epidemiology and Surveillance \(ABLES\) System](#)

Technical notes for Occupational Diseases table

1. The disease diagnosis of individuals reported to the surveillance system at Michigan State University is reported as a narrative or as an ICD-9-CM (International Classification of Diseases 9th revision, Clinical Modification) code. If the disease is reported as a narrative, MSU assigns the appropriate ICD-9-CM code, with these exceptions:
 - a. Mesothelioma is coded using the ICD-Oncology system (ICD-O in the range 9050-9053).
 - b. The diagnosis “pleural thickening” does not have an ICD-9-CM code; MSU assigns its own unique code.
 - c. In-depth surveillance is conducted on five conditions: occupational asthma, silicosis, work-related noise-induced hearing loss, adult blood lead toxicity, and occupational pesticide illness/injury. These systems are based on multiple data sources. Each system is maintained separately and cases are confirmed with a specific diagnosis using established public health surveillance case definitions.
2. An individual may be reported more than once within a given year or over a period of years with the same disease or different work-related diseases. If an individual with a chronic disease is reported more than once, the earliest year reported is counted; subsequent reports on the same disease are not counted. If an individual is reported more than once for acute illness – either in the same year or over a period of years – each acute illness is counted.
3. The data for elevated blood lead levels reflect prevalence, which include any case with the specified elevated blood lead level regardless of whether the case is newly identified or identified in a previous year.