OCCUPATIONAL HEALTH INDICATORS FOR MONTANA

A Baseline Occupational Health Assessment

for calendar years 2004–2008

Montana Department of Labor & Industry
Employment Relations Division

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INTRODUCTION

The National Institute for Occupational Safety and Health (NIOSH) defines public health surveillance as "the ongoing systematic collection, analysis, and interpretation of health data for purposes of improving health and safety." [1] Generically speaking, health data is a very broad term that encompasses many fields of study and areas of life. For the purposes of this report, surveillance activities will focus on occupational health, that which is related to employment or the workplace.

A primary goal of occupational health surveillance is to make the workplace safer through identification and remediation of unsafe workplace activities, hazards and exposures. Surveillance is the first step in pursuing that goal by providing identification, tracking and monitoring of occupational injuries and diseases and their causes. From this information, unsafe conditions can be targeted and resources allocated to develop and provide solutions or prevention efforts.

This report introduces the Montana Occupational Health Surveillance Project (MOHSP) and presents an initial baseline assessment of occupational health in Montana using a set of nationally developed measurements, called occupational health indicators.

Montana Occupational Health Surveillance

The Employment Relations Division (ERD), Montana Department of Labor and Industry (DLI), conducts significant occupational health surveillance and research activity in the area of workers' compensation and workplace injuries and diseases. Although ERD produces numerous research and surveillance outputs, the primary occupational health surveillance document is the Workers' Compensation Annual Report,[2] published annually by ERD. The report contains detailed descriptive statistics and trends of workers' compensation claims in Montana, along with other information about the state workers' compensation system.

Other state participants in occupational health surveillance are the DLI's Research and Analysis Bureau (R&A) and the Department of Public Health and Human Services (DPHHS). R&A is the state's clearinghouse for BLS data and publishes periodic surveillance reports covering workplace injuries, such as annual reports on workplace fatalities and occupational injuries and illnesses.[3] DPHHS has recently published a surveillance report, "Occupational and Work Aggravated Asthma."[4] They are also involved in other occupational surveillance. DPHHS has a joint agreement with the Montana Hospital Association, providing the public with summary statistics on hospital discharge data.

ERD's current surveillance and research activities are primarily conducted with injury and occupational disease data reported to ERD from workers' compensation insurers or their agents. Other sources of data frequently used include state unemployment insurance data, Bureau of Labor Statistics (BLS) data and periodic surveys.

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1 National Institute for Occupational Safety and Health, Division of Surveillance, Hazard Evaluations, and Field Studies, "Surveillance," June 11, 2009.
2 Worker's Compensation Claims Assistance Bureau, Employment Relations Division, Department of Labor and Industry. Various years. Available at: http://erd.dli.mt.gov/#annual-report
3 Research and Analysis Bureau, Workforce Services Division, Department of Labor and Industry. Various years. Available at: http://www.ourfactsyourfuture.mt.gov
4 DPHHS, Asthma Control Program, "Occupational and Work Aggravated Asthma," 2010

Occupational Health Indicators

In 2001, NIOSH and the Council of State and Territorial Epidemiologists (CSTE) implemented a comprehensive state-based occupational health surveillance system which included the development of a recommended set of common occupational health indicators (OHI). The collection of OHIs "allows a state to compare its health or risk status with that of other states and evaluate trends over time with the state, and guide priorities for prevention and intervention efforts." [5]

CSTE publishes an excellent instructional guide to assist states in the collection of the OHIs. The guide, "Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants,"[6] provides descriptions of each indicator and detailed instructions on how to obtain and compile the statistics. ERD used the sources and methodologies described in the guide for its collection, compilation and presentation of the OHIs. A summary listing of the current recommended list of 20 OHIs is as follows:

- **Indicator 1:** Non-Fatal Work-Related Injuries and Illnesses
- **Indicator 2:** Work-Related Hospitalizations
- **Indicator 3:** Fatal Work-Related Injuries
- **Indicator 4:** Work-Related Amputations with Days Away from Work Reported by Employers
- **Indicator 5:** Amputations Identified in State Workers' Compensation System
- **Indicator 6:** Hospitalizations for Work-Related Burns
- **Indicator 7:** Work-Related Musculoskeletal Disorders with Days Away from Work Reported by Employers
- **Indicator 8:** Carpal Tunnel Syndrome Cases Identified in State Workers' Compensation System
- **Indictor 9:** Pneumoconiosis Hospitalizations
- **Indicator 10:** Pneumoconiosis Mortality
- **Indicator 11:** Acute Work-Related Pesticide Poisonings Reported to Poison Control Centers
- **Indicator 12:** Incidence of Malignant Mesothelioma
- **Indicator 13:** Elevated Blood Lead Levels Among Adults
- **Indicator 14:** Workers Employed in Industries with High Risk for Occupational Morbidity
- **Indicator 15:** Workers Employed in Occupations with High Risk for Occupational Morbidity
- **Indicator 16:** Workers Employed in Industries and Occupations with High Risk for Occupational Mortality
- **Indicator 17:** Occupational Safety and Health Professionals
- **Indicator 18:** OSHA Enforcement Activities
- **Indicator 19:** Workers' Compensation Awards
- **Indicator 20:** Work-Related Low Back Disorder Hospitalizations

5 Council of State and Territorial Epidemiologists, "Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants," updated May 2010. Available at www.cste.org.
6 Ibid

ERD believes the collection of the 20 OHIs is a useful addition to the state's already established occupational health surveillance and research activities. OHI surveillance will improve overall occupational data collection efforts and networking in Montana. The purpose of the OHI collection and this report is to complete the first step of the Montana Occupational Health Surveillance Project (MOHSP). Montana has completed the collection of the 20 OHIs and they are presented here for the first time.

As noted above, the collection of OHIs is only a first step in developing a comprehensive occupational health surveillance program for Montana. In addition to compiling the 20 OHIs, other goals of MOHSP include:

- Create a 'one-stop shop' web page for Montana with comprehensive information on occupational health and workers' compensation surveillance activities and research, containing actual data, reports, and links to the other applicable resources.
- Development of relationships and networks with other state, federal and local participants in occupational health. MOHSP is in its earliest stages and as such, a comprehensive strategic plan is still in development.

MOHSP will hopefully be an important resource for policymakers, employers, health professionals, insurers, regulators and other system stakeholders in improving Montana's workers' compensation system and workplace environments. Montana's ultimate goal is to eliminate preventable workplace injuries and diseases.

Highlights of the report are listed below:

- Montana had the highest incidence rate for nonfatal injuries and illnesses in private industry with a rate of 6.4 per 100 full-time equivalent, which was 64% greater than the national average of 3.9 per 100 full-time equivalent (pg. 13).
- Fifty-eight percent of Montana's work-related hospitalizations were related to Musculoskeletal System and Connective Tissue diagnosis, with an average hospital stay of 3 days (pg. 15).
- Forty employed persons were killed in work-related injuries in Montana in 2008, ranking Montana as 3rd highest nationally for work-related fatalities (pg. 18).
- Carpal Tunnel Syndrome cases in Montana have declined significantly over the past five years, from a rate of 122.6 per 100,000 workers' covered in 2004, to a rate of 29.5 in 2008 (pg. 29).

MONTANA EMPLOYMENT DEMOGRAPHIC PROFILE

Background

Understanding the characteristics of the working population is essential in the assessment of occupational health and work-related injury and illness prevention. It allows for more detailed analysis of worker subgroups and industries that may be experiencing higher than expected rates of work-related injuries or illnesses and helps in the planning and development of prevention activities.

From 2004 to 2008, the United States had an average civilian workforce of 143 million persons. The national unemployment rate ranged from 4.6% in 2006 and 2007 to 5.8% in 2008. Fifty-five percent of the workforce was composed of males between the ages of 18 and 64 in 2008. Forty-four percent of the workforce in 2008 worked an average of 40 hours a week.

Montana Results

Montana's average workforce from 2004 to 2008 was 479,600 persons and Montana's unemployment rate was 5.2% in 2008. Montana has almost twice the percentage of workers that are self-employed than nationally, 13.7% in Montana compared to 7.1% nationally. About 60% of Montana workers worked 40 hours or more per week.

The industries with the largest number of employees in 2008 were:

- Education and health services (21.3%)
- Wholesale and retail trade (15.0%)
- Construction (10.6%)
- Leisure and hospitality (10.3%)

The occupations with the largest number of workers in 2008 were:

- Professional and related (18.4%)
- Service (18.4%)
- Management, business, and financial operations (17.7%)
- Office and administrative support (12.0%)
- Sales and related (11.2%)

Table P.1

Number of Workers Employed in MT and US, 2004-2008

Year	MT	US
2004	462,000	140,585,000
2005	476,000	143,350,000
2006	487,000	144,427,000
2007	492,000	146,047,000
2008	481,000	140,861,000

Figure P.2

Unemployed and Employed MT and US Workers by Employment Status, 2008

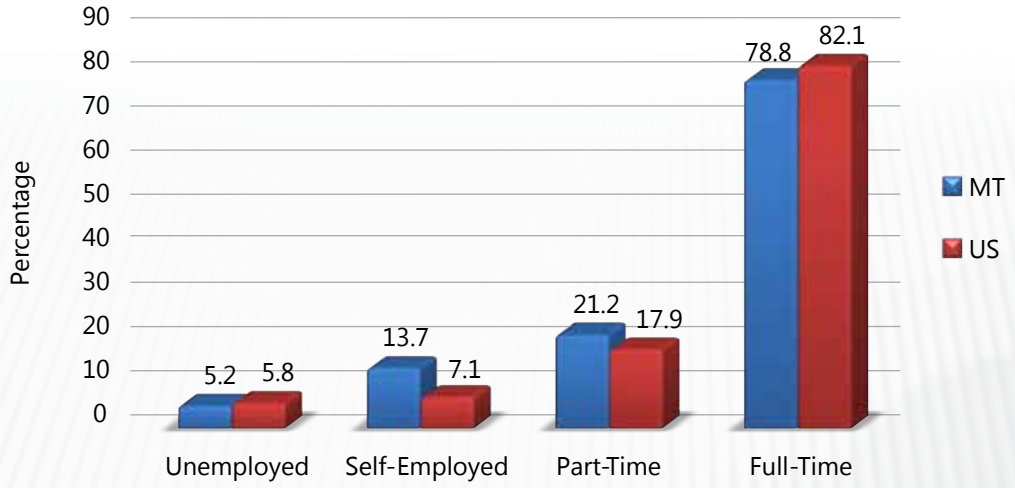


Table P.2

Percentage of Unemployed and Employed MT and US Workers by Employment Status, 2004-2008

	MT				US			
Year	Unemployed	Self-Employed	Full-Time	Part-Time	Unemployed	Self-Employed	Part-Time	Full-Time
2004	4.9	14.3	77.5	22.5	5.5	7.4	17.6	81.3
2005	4.4	13.5	78.4	21.2	5.1	7.3	17.4	81.8
2006	3.6	13.2	79.9	20.1	4.6	7.4	17.2	82.7
2007	3.6	12.9	79.3	21.1	4.6	7.2	17.2	83
2008	5.2	13.7	78.8	21.2	5.8	7.1	17.9	84.9

Figure P.3

Employed MT and US Workers by Hours Worked, 2008

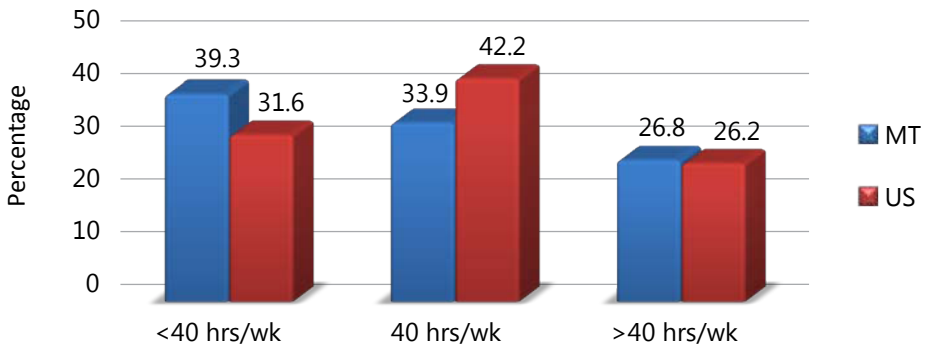


Figure P.4

Employed MT and US Workers by Gender, 2008

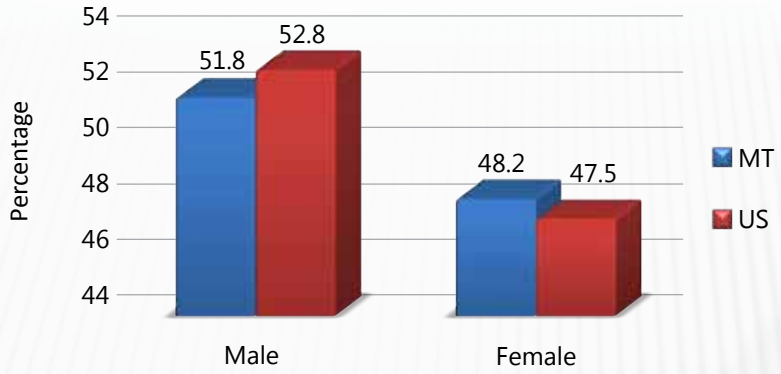


Figure P.5

Employed MT and US Workers by Age, 2008

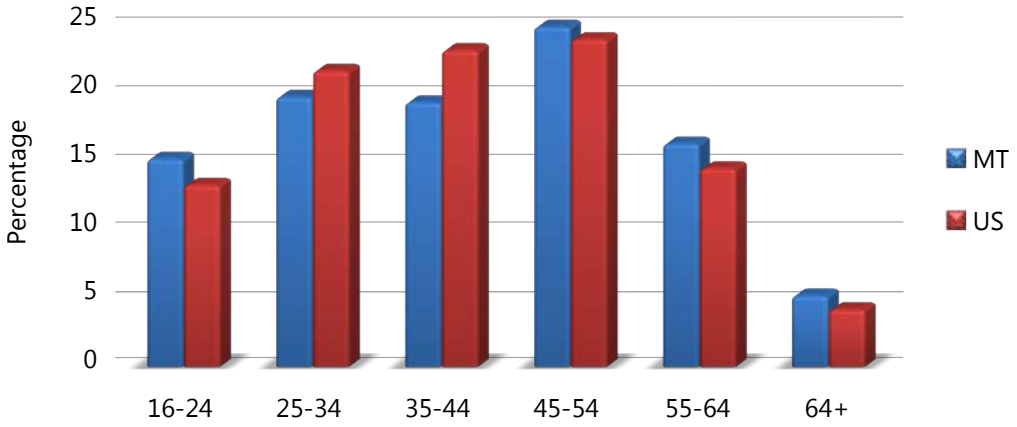


Figure P.6

Employed MT and US Workers by Race and Ethnicity, 2008

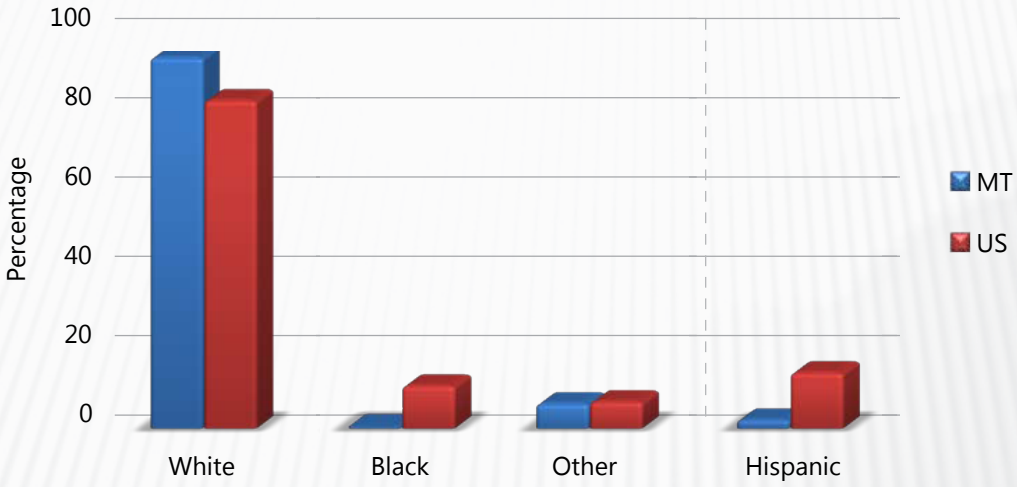


Figure P.7

Percentage of Employed Workers by Industry in MT, 2008

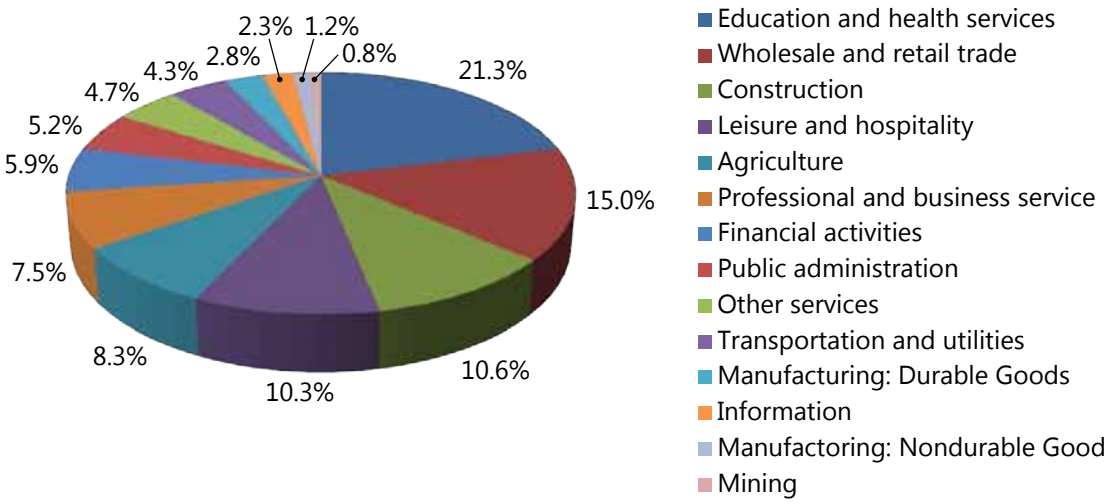
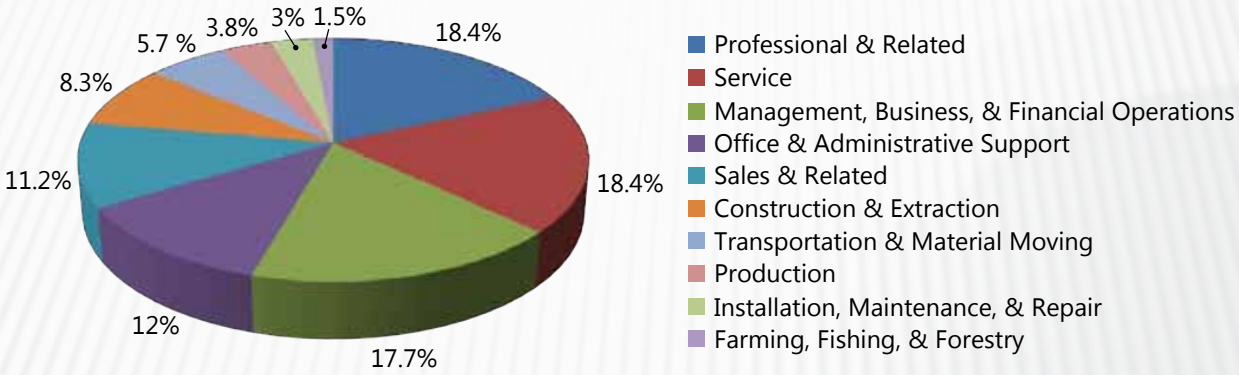


Figure P.8

Percentage of Employed Workers by Occupation in MT, 2008



INDICATOR 1: NONFATAL INJURIES AND ILLNESSES

Background

Indicator 1 provides national and state level measurement of the prevalence and rate of nonfatal work-related injuries and illnesses. This is useful because it allows a simple and quick picture of the trends of injuries and illnesses for policymakers, employers, health professionals and other stakeholders. This knowledge, combined with further detail of the data by industry, cause of injury, nature of injury, part of body and other factors is useful for intervention, education, prevention and regulatory efforts.

Nonfatal work-related injuries are caused by accidents during the performance of duties, including such things as burns, falls, strains, sprains, fractures, electric shocks, amputations, or being struck by a falling object. Work-related illnesses, or occupational diseases as they are sometimes called, are usually a result of cumulative exposure to hazardous materials or repetitive motions in the workplace or during the performance of duties. Examples include occupational asthma, asbestosis, pneumoconiosis (dust-induced lung disease), mesothelioma, and carpal tunnel syndrome.

In the United States in calendar year 2008, the total number of nonfatal injuries and illnesses in private industry[7] was 3.7 million. The majority, 94.9%, of these events were injuries, while the remaining 5.1% were illnesses. Injuries or illnesses that involved days away from work comprised about 30% of all events. Most injuries and illnesses occurred in manufacturing (689,700), health care and social assistance (660,200), retail trade (532,800), construction (322,700), accommodation and food services (311,700), and transportation and warehousing industries (241,800). Incidence rates per 100 full-time equivalent (FTE) for all nonfatal injuries and illnesses were highest in transportation and warehousing (5.7), health care and social assistance (5.4), and agriculture, forestry, fishing and hunting (5.3).[8]

Montana Results

In 2008, Montana had the highest incidence rate for nonfatal injuries and illnesses in private industry in the United States (of 42 surveyed states).[9] Montana's rate of 6.4 per 100 FTE was 64% greater than the national average of 3.9.

The United States injury and illness incident rate for private industry is on a steady decline, decreasing 18.8% from 2004 to 2008. Montana's rate also decreased, but lagged significantly behind the national decline, with a decrease of only 11.1% over the same period. Likewise, for the injury incident rate resulting in days off work, the national decline from 2004 to 2008 was 21.4%, compared to the Montana decline of only 13.0%.

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7 Private Industry does not include the military, self-employed individuals, farms with fewer than 11 employees, and federal, state, and municipal employees.
8 Bureau of Labor Statistics, "2008 Survey of Occupational Injuries and Illnesses Summary Estimates Charts Package," October 29, 2009
9 Ibid.

Figure 1.1

State Nonfatal Occupational Injury and Illness Incidence Rates Compared to the National Rate, Private Industry, 2008

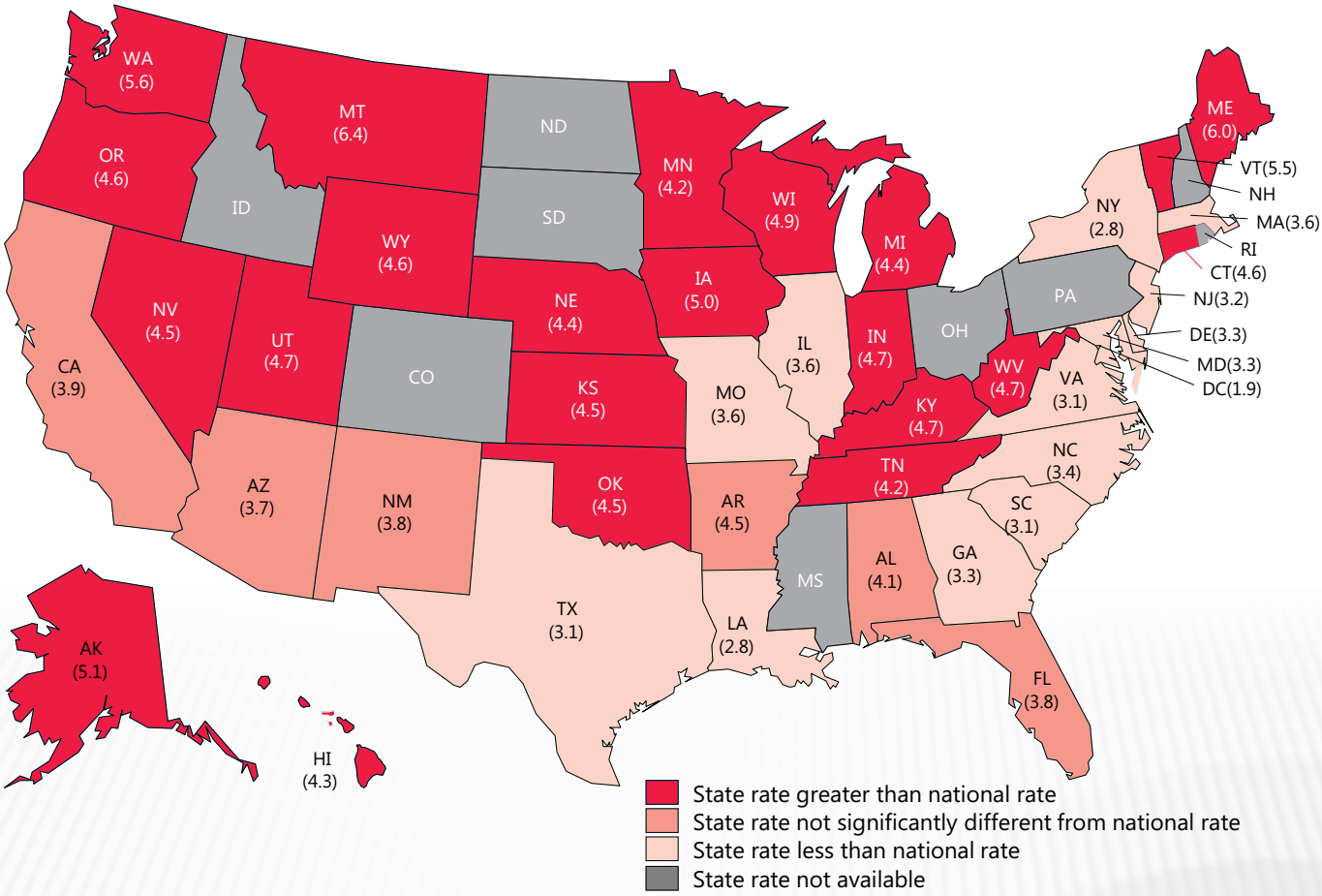

Table 1.1

Total Number (Rate per 100 FTE) of Nonfatal Work-Related Injuries and Illnesses for Private Industry in MT and US, 2004-2008

Year	MT	US
2004	18,800 (7.2)	4,257,000 (4.8)
2005	17,000 (6.6)	4,214,000 (4.6)
2006	18,900 (6.9)	4,085,000 (4.4)
2007	17,800 (6.3)	4,002,000 (4.2)
2008	18,000 (6.4)	3,696,000 (3.9)

Figure 1.2

Nonfatal Rate of Work-Related Injury and Illness, MT and US, 2004-2008

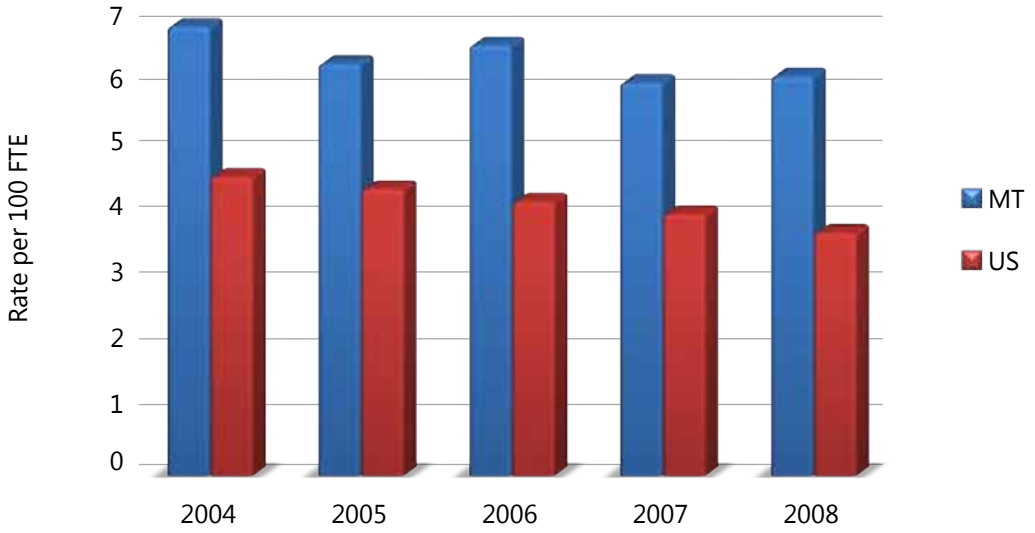

Table 1.2

Total Number (Rate per 100 FTE) of Nonfatal Work-Related Injuries and Illnesses Involving Days Away from Work for Private Industry, MT and US, 2004-2008

Year	MT	US
2004	5,900 (2.3)	1,259,300 (1.4)
2005	5,600 (2.2)	1,234,700 (1.4)
2006	5,500 (2.0)	1,183,500 (1.3)
2007	5,100 (1.8)	1,158,900 (1.2)
2008	6,000 (2.1)	1,078,100 (1.1)

INDICATOR 2: WORK-RELATED HOSPITALIZATIONS

Background

More serious work-related injuries and illnesses may result in hospitalization for observation, stabilization, treatment or other medical reasons. The hospitalization can occur either at the time of injury or illness or at a point in the future. Additionally, injuries or illnesses resulting in hospitalization are usually more costly, both monetarily and in their affect on the worker and in some cases resulting in long-term disability.

Approximately 3% of workplace injuries and illnesses result in hospitalizations. Charges for these hospitalizations exceed $3 billion annually. In 2005, this equated to about 170,000 work-related hospitalizations in the United States. Most identified work-related hospitalizations are for treatment of musculoskeletal disorders and acute injures. Furthermore, hospitalizations involving workers' compensation usually involve more procedures and a longer length of stay.[10]

Montana Results

The Montana work-related hospitalization rate in 2008 was 55.3 per 100,000 workers, down from a high rate of 116 in 2005. For comparison purposes, the rate in several nearby states in 2005 was: Wyoming 237.4, Washington 161.1 and Oregon 146.5.

10 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators," 2010

Figure 2.1

Annual Rate of Hospitalizations in MT, 2004-2008

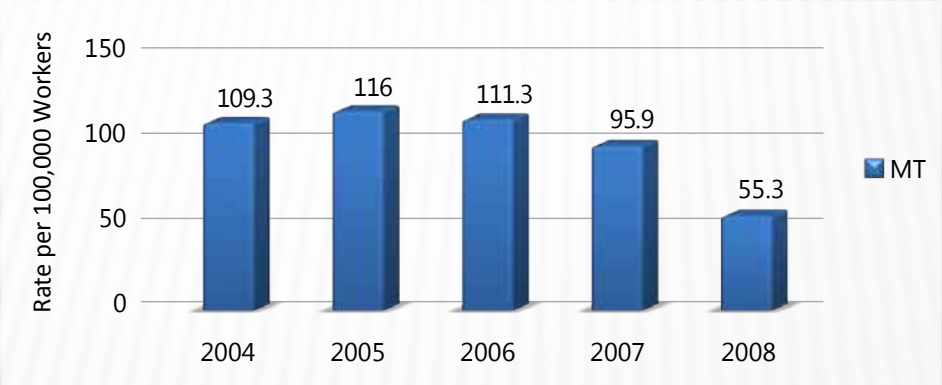

Table 2.1

Total Workers' Compensation Hospital Discharges in MT, 2004-2008

Year	Number of Work-Related Hospitalizations	Annual Rate of Hospitalizations per 100,000 Workers
2004	505	109.3
2005	552	116.0
2006	542	111.3
2007	472	95.9
2008	266	55.3

INDICATOR 3: FATAL WORK-RELATED INJURIES

Background

Although the vast majority of work-related injuries do not result in serious injury, some work-related accidents result in the death of the worker. These deaths may be either caused unintentionally by an accident or intentionally, such as homicides or suicides. Numerous factors, such as workplace design or processes, work organization, worker characteristics, and others may contribute to worker fatalities.

In 2008, there were 5,071 fatal work-related injuries, almost 14 per day, recorded in the United States. This was 586 fatalities less than were recorded in 2007, a decrease of over ten percent. The national rate of fatal work-related injury was 3.6 per 100,000 full-time equivalents (FTE) in 2008, down from the rate of 4.0 per 100,000 FTE in 2007.

The largest percentage (40%) of work-related fatalities occurred in transportation incidents. Other event types include contact with objects and equipment (18%), assaults and violent acts (16%), falls (13%), exposure to harmful substances or environments (9%), and fires and explosions (3%). The majority of work-related fatalities involved males (93%) between the ages of 35 to 54. Goods producing and service providing industries made up 68% of work-related fatalities, while transportation and material moving occupations made up 26%.[11]

Montana Results

Forty persons were killed in work-related injuries in Montana in 2008. This was a decrease from the previous year, during which 54 employed persons were killed. The 2008 work-related fatality rate in Montana was 8.2 per 100,000 FTE, which was more than two times higher than the national fatality rate. Montana's rate was the 3rd highest in the United States, below Wyoming (11.6) and Alaska (9.9).

The majority of work-related fatalities in Montana occurred in Natural Resources & Mining (35%); Trade, Transportation, and Utilities (30%); Construction (13%); and Leisure and Hospitality (8%). The most dangerous occupation, as measured by the number of fatalities, was Transportation and Material Moving (35.9%). Similar to the national trend, the 45-54 year old age group had the largest percentage of work-related deaths (38.5%). The primary causes of death were transportation related (48%), assaults and violent acts (13%), contact with objects and equipment (18%), falls (15%), and exposure to harmful substances or environments (8%).

More detailed information on work-related fatalities in Montana is compiled and reported annually by the Department of Labor and Industry's Research and Analysis Bureau.[12]

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11 Bureau of Labor Statistics, "Fatal Occupational Injuries by Event or Exposure, 2007-2008." http://www.bls.gov/news.release/cfoi.t01.htm

12 Montana Department of Labor and Industry, Research & Analysis Bureau, "Montana Census of Fatal Occupational Injuries 2008," 2008. Available at www.ourfactsyourfuture.org.

Figure 3.1

Rate of Fatal Work-Related Injuries in MT and US, 2004-2008

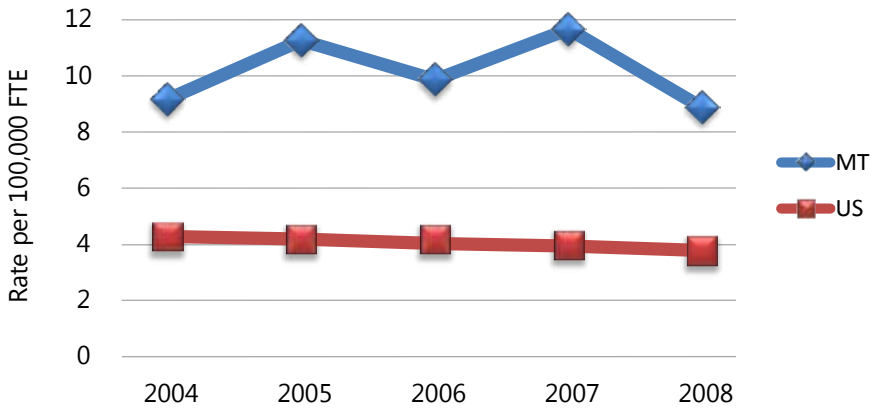

Table 3.1

Number (Rate per 100,000 FTE) of Fatal Work-Related Injuries in MT and US, 2004-2008

Year	MT	US
2004	39 (9.2)	5764 (4.3)
2005	50 (11.3)	5734 (4.2)
2006	45 (9.9)	5840 (4.2)
2007	54 (11.7)	5657 (4.0)
2008	40 (8.9)	5214 (3.8)

INDICATOR 4: AMPUTATIONS REPORTED BY EMPLOYERS

Background

Work-related amputations involving at least one day away from work are injuries that may greatly affect a worker's capability to perform their time-of-injury job or other jobs, their ability to maintain or increase earnings, and their personal activities. In 2008 in the United States, there were 6,230 cases of amputations resulting in days away from work in private industry. The median number of days away from work for amputations was 26 days, as compared to the median for all injuries of 8 days. Fifty-six percent of amputation cases involved more than 20 days away from work.[13]

Nationally, most (94.7%) work-related amputations in 2008 involved full or partial loss of fingers. The next largest category, amputations involving the foot, made up just over three percent of amputations. The majority of amputations occurred in manufacturing and trade (2,720 or 43.7%) and transportation and utilities (1,330 or 21.3%) industries. Employees employed more than 5 years made up 32% of amputations; 36% of amputations occurred in the first year of employment.[14]

Montana Results

BLS data show an increase in private industry amputations in Montana in 2008 from 20 to 90, which was also significantly higher than any previous year. This could be caused by underreporting by employers in previous years or a sampling error. However, data in Indicator 5 do not appear to substantiate the increase. This apparent anomaly will be looked at again when 2009 BLS data is released.

In the cases where age was known, workers between the ages of 35 to 54 accounted for all of Montana amputations in 2008. Fifty-six percent of the amputations occurred in the accommodation and food services industry sector. The involved body part for all amputations was the finger and they occurred while using hand tools. The majority of workers had been employed five years or longer and most amputation cases resulted in 11 to 20 days away from work.

13 Bureau of Labor Statistics, "Number of nonfatal occupational injuries and illnesses involving days away from work by selected worker and case characteristics and nature of condition, All U.S., private industry, 2008."
14 Ibid.

Figure 4.1

Estimated Annual Incidence Rate of Work-Related Amputations Involving Days Away from Work in MT and US, 2005-2008

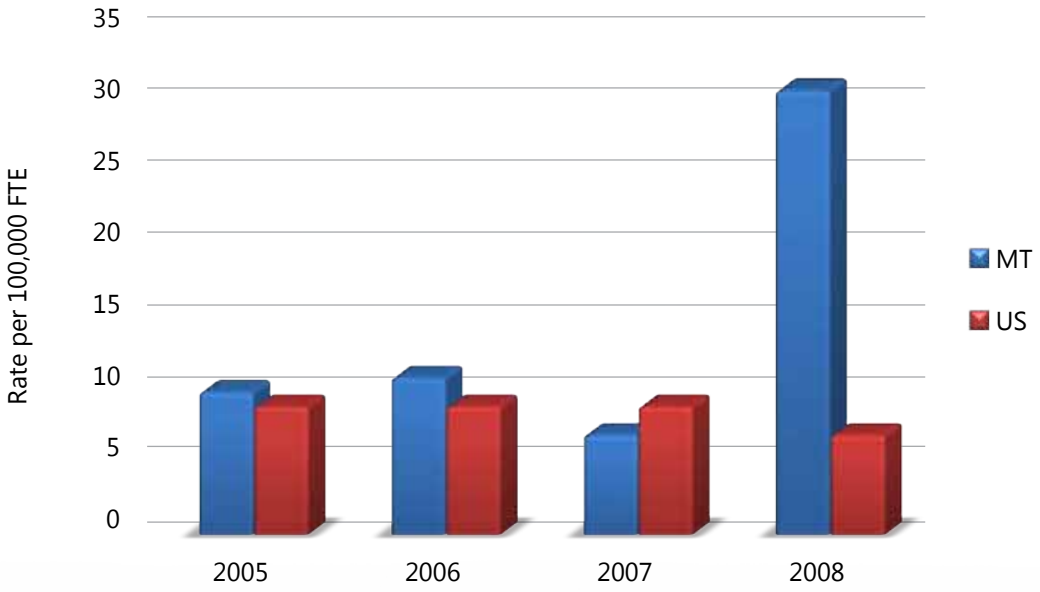

Table 4.1

Estimated Number (Rate per 100,000 FTE) of Work-Related Amputations Involving Days Away from Work in MT and US, 2005-2008

Year	MT	US
2005	30 (10.0)	8,450 (9.0)
2006	30 (11.0)	7,990 (9.0)
2007	20 (7.0)	7,320 (9.0)
2008	90 (31.0)	6,230 (7.0)

INDICATOR 5: AMPUTATIONS IDENTIFIED IN STATE WORKERS' COMPENSATION SYSTEM

Background

The Montana workers' compensation system requires insurance carriers or their representatives to report all work related injuries to the Department of Labor and Industry. Reporting follows national standards developed by the International Association of Industrial Accident Boards and Commissions (IAIABC).

The waiting period in Montana for eligibility for workers' compensation wage-loss benefits is 4 days or 32 hours. The Montana system covers all employers with employees, excluding federal employees, independent contractors and selected exemptions.

Montana workers' compensation data is not directly comparable to BLS data in Indicator 4 due to the above reasons. However, trends and amputation levels would be expected to remain somewhat consistent between the two sources of data.

Montana Results

Generally, the overall numbers and incident rates for work-related amputations with lost time in Montana declined from 2004 to 2008. Eighteen amputations resulting in wage loss benefits were reported in 2008, for an incidence rate of 4.2 per 100,000 FTE. If all amputations reported in Montana are included, the number increases to 59, for an incidence rate of 13.9 per 100,000 FTE. Anywhere from 30% to 55% of amputations in Montana resulted in wage loss or an indemnity benefit, depending on the year.

The age at time of injury for the 18 amputations was broken down as follows:

- 15-24: 22.2%
- 25-34: 22.2%
- 35-44: 16.7%
- 45-54: 22.2%
- 55-65: 16.7%

The vast majority of reported lost time amputations in the workers' compensation system in 2008 were of the finger (94.4%). The other reportable part of body was the toe (5.6%). The top three industries for amputations were Wholesale Trade, Construction, and Agriculture, Forestry, Fishing and Hunting.

Comparing the amputation incident rates calculated in Indicator 4 and Indicator 5, the trends are similar from the two sources for 2005 to 2007. The very high number of amputations reported by BLS in 2008 is not substantiated by Montana workers' compensation data. Except for 2006 and 2008, the number of Montana amputation cases with lost time are greater than

BLS reported numbers. In 2008, both Montana amputation cases with lost work time and the total number of amputation cases are significantly fewer than the BLS reported data.

Reviewing the accident descriptions for the 18 amputations, it is interesting to note that 15 of the 18 amputations were caused by the use of a machine or hand tool, or a finger(s) being caught between two objects; the remaining three amputations were caused by being struck or injured by a falling or flying object.

Figure 5.1

Annual Incidence Rate of Amputations Filed with Workers' Compensation in MT, 2004-2008

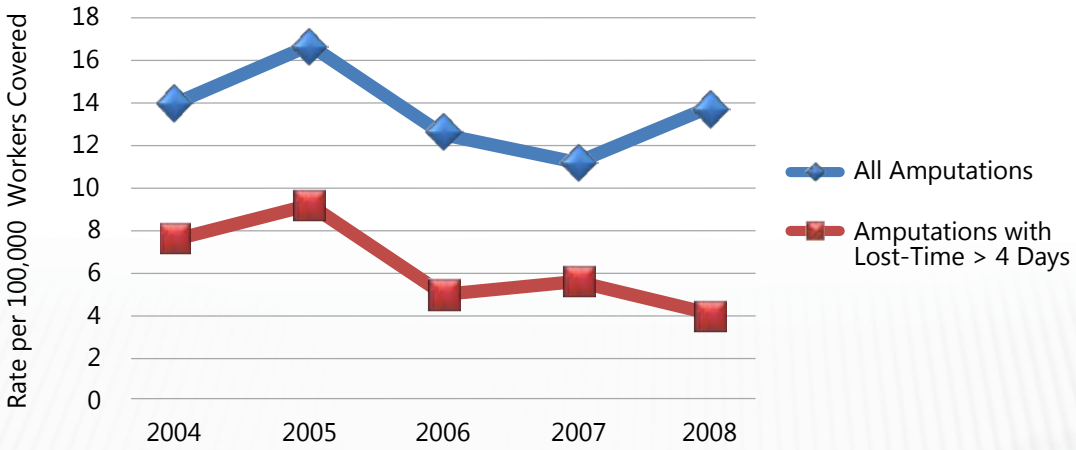

Table 5.1

Montana Workers' Compensation Claims for Amputations, 2004-2008

Year	Number of Amputation Claims Filed (Rate per 100,000 Workers Covered)	Number of Amputation Claims with Lost Work-Time > 4 Days (Rate per 100,000 Workers Covered)
2004	55 (14.1)	30 (7.7)
2005	67 (16.8)	37 (9.3)
2006	52 (12.6)	21 (5.1)
2007	48 (11.3)	24 (5.7)
2008	59 (13.9)	18 (4.2)

INDICATOR 6: HOSPITALIZATIONS FROM WORK-RELATED BURNS

Background

Hospitalizations from work-related burns include injuries to tissues caused by contact with dry heat (fire), moist heat (steam), chemicals, electricity, friction, or radiation. Burns are among the most expensive work-related injuries to treat and can result in significant disability.

Describing and tracking hospitalizations for work-related burns is useful for identifying and targeting prevention in high risk occupations or work processes that expose workers to burn causing agents and leave them more susceptible to burns.

Thermal and chemical burns are the most frequent types of work-related burns, and they usually occur in the service industry, especially food service. Welders, cooks, laborers, food service workers, and mechanics generally have the highest rates of burn injury, with the majority being to the upper extremities. In the United States it is estimated that 150,000 people with work-related burns are treated in emergency rooms annually. Approximately 30% to 40% of hospitalizations for burns were found to be work-related.[15]

Montana Results

Very few hospital discharges for work related burns were reported in Montana from 2004 to 2008. Less than five burns hospitalizations were reported in 2007, and there weren't any reported in 2008. The rate in Montana in 2004 for work related burn hospitalizations was 1.1 per 100,000 workers. This is significantly less than Wyoming for the same year (14.0), while more comparable to Washington (2.3), and Oregon (1.4).

15 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators", 2010. Available at www.cste.org.

Table 6.1

Hospital Discharges for Work-Related Burns in MT, 2004-2008

Year	Number of Hospitalizations for Work-related Burns	Annual Rate of Work-Related Burn Hospitalizations per 100,000 Workers
2004	5	1.1
2005	<5	*
2006	<5	*
2007	<5	*
2008	<5	*

* NOT STATISTICALLY SIGNIFICANT

INDICATOR 7: MUSCULOSKELETAL DISORDERS REPORTED BY EMPLOYERS

Background

Musculoskeletal disorders (MSDs) affect the body's muscles, joints, tendons, nerves, and ligaments. Most work-related MSDs develop over time and significantly impact the ability of workers to continue performing their everyday duties effectively. Work activities that usually contribute to MSDs include repetitive motion, awkward body movement, bending and twisting, handling of equipment that vibrates and lifting of heavy objects. Low back MSDs are associated with work-related lifting and forceful movements.[16]

Nationally, MSDs account for over one-third of all work-related injuries and illnesses involving days away from work. Workers' compensation costs for work-related MSDs have been estimated at $20 billion annually in the United States.[17] Implementation of safety programs that target posture, lifting, pushing, pulling and stretching techniques may decrease occurrences of MSDs.

Montana Results

Montana's rate of MSDs involving days away from work was over two and one half times the national rate in 2008. Montana's rate was 8.8 per 1,000 full-time equivalents (FTE) compared to the United States rate of 3.3.

The body part most often affected by MSDs in 2008 was the back (57%), followed by the upper extremities (19%), shoulders (19%) and neck (5%).

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16 National Institute for Occupational Safety and Health. "Musculoskeletal Disorders and Workplace Factors, 1997".
17 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"

Figure 7.1

Musculoskeletal Disorders Involving Days Away From Work by Body Part in MT, 2004-2008

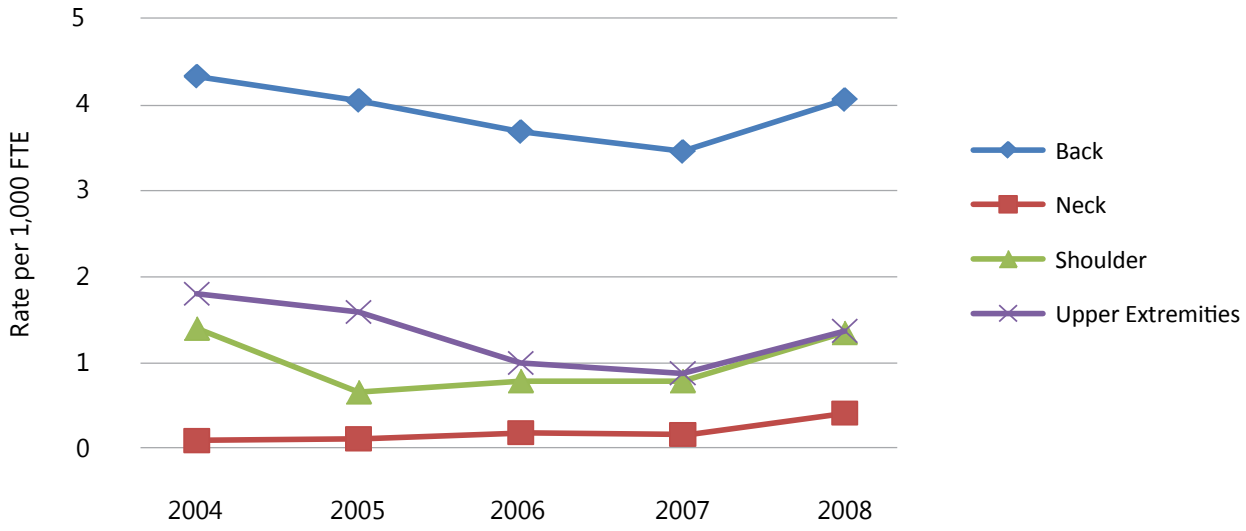

Table 7.1

Number (Rate per 1,000 FTE) of Musculoskeletal Disorders Involving Days Away from Work in MT and US, 2004-2008

Year	MT	US
2004	2,600 (10.0)	402,700 (4.5)
2005	2,270 (8.8)	375,540 (4.1)
2006	1,960 (7.1)	357,160 (3.9)
2007	1,920 (6.8)	335,390 (3.5)
2008	2,480 (8.8)	317,440 (3.3)

INDICATOR 8: CARPAL TUNNEL SYNDROME CASES IDENTIFIED IN WORKERS' COMPENSATION SYSTEMS

Background

Carpal Tunnel Syndrome (CTS) is caused by the compression of nerves in the hand or wrist. Contributing factors include high exertion force and high repetition, placing hands or limbs in awkward positions or using equipment that vibrates. Symptoms include tingling and numbness of the fingers or palm of the hand and pain in the wrist or hand which can lead to a weakened grip or difficulty carrying objects. CTS cases have the longest average disability duration among the top ten workers' compensation conditions in the US.[18]

The National Council on Compensation Insurance (NCCI) published a research brief in September 2010 on the decline of workers compensation claim frequencies. They noted a decline in the national frequency of carpal tunnel claims with days away from work of 46% from 2004 to 2008.[19]

Montana Results

CTS cases in Montana have declined significantly over the past five years, from a rate of 122.6 per 100,000 workers' covered in 2004, to a rate of 29.5 in 2008. The incident rate of CTS cases with more than four days of lost time decreased from 36.4 per 100,000 workers to a rate of 6.4 during the same period. This could be due to the increased awareness and prevention efforts over the years, with a focus on stretching and exercising the wrist, hand and fingers, combined with better ergonomics in the work place.

Most CTS cases in Montana with days away from work in 2008 involved adult females between the ages of 45 to 54 (44%). Among the CTS cases with lost-time, 89% had a cause of injury reported as "repetitive motion" and 48% reported the injured body part as "wrist".

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18 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"

19 NCCI, "Workers Compensation Claim Frequency Continues to Decline in 2009", https://www.ncci.com/Documents/research-claims-frequency-sept-2010.pdf

Figure 8.1

Annual Incidence Rate of Carpal Tunnel Syndrome Cases Filed with Workers' Compensation in MT, 2004-2008

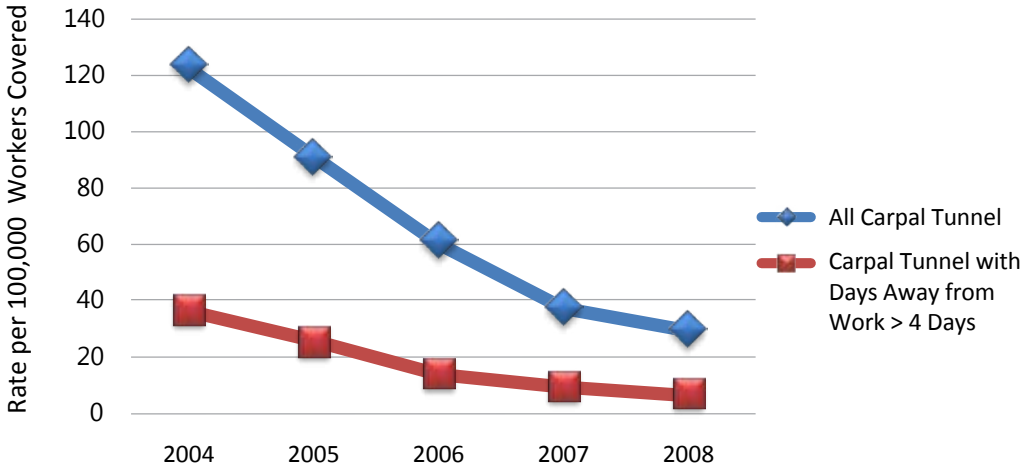

Table 8.1

Montana Workers' Compensation Claims for Carpal Tunnel Syndrome in MT, 2004-2008

Year	Number of Carpal Tunnel Claims Filed (Rate per 100,000 Workers Covered)	Number of Carpal Tunnel Claims with Lost Work-Time > 4 Days (Rate per 100,000 Workers Covered)
2004	478 (122.6)	142 (36.4)
2005	365 (91.3)	104 (26.0)
2006	249 (60.3)	58 (14.0)
2007	158 (37.4)	40 (9.5)
2008	125 (29.5)	27 (6.4)

INDICATOR 9: PNEUMOCONIOSIS HOSPITALIZATIONS

Background

Pneumoconiosis is a chronic lung disease, caused by inhalation of dust or particulates, most often found in miners. Most cases of pneumoconiosis develop after many years of cumulative exposure and are more prevalent in older individuals, long after the onset of exposure. Contributing factors to this lung disease may be silicosis, asbestosis, and less commonly, long-term exposure to other mineral dusts, including talc, aluminum, bauxite and graphite. Pneumoconiosis in coal workers results from breathing in dust from coal, graphite or man-made carbon over a long period of time.[20]

Complications of pneumoconiosis that may cause hospitalizations include respiratory infections, tuberculosis, chronic bronchitis, emphysema, lung cancer, pleuritis, progressive systemic sclerosis, renal disease and respiratory failure. These are all diseases that are ultimately incurable and may result in death. Providing workers with good ventilation and protective equipment will help curb the onset of pneumoconiosis.[21]

Montana Results

In Montana, 176 cases of hospitalizations for pneumoconiosis cases were reported in 2008, which translates to a rate of 201.3 hospitalizations per one million residents. The main cause of hospitalization from or with pneumoconiosis was the result of exposure to or inhalation of asbestos. Hospitalizations attributable to pneumoconiosis may be underreported because symptoms are difficult to pinpoint as directly related to pneumoconiosis.[22]

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20 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"
21 Ibid.
22 Ibid.

Figure 9.1

Annual Age Standardized Rate of Workers with Pneumoconiosis by Cause in MT, 2004-2008

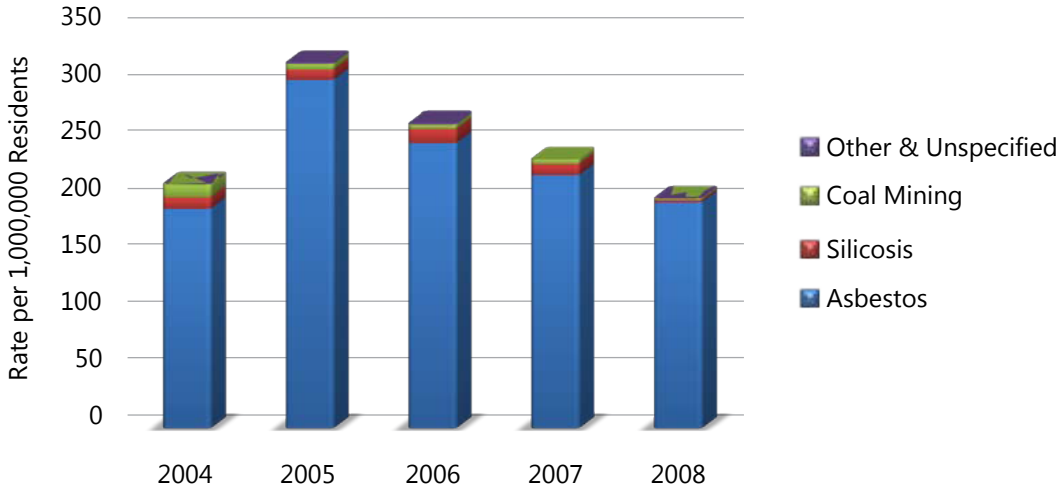

Table 9.1

Annual Hospitalizations from or with Pneumoconiosis in MT, 2004-2008

Year	Annual Number of Hospitalizations from or with Pneumoconiosis	Age Standardized Rate per 1,000,000 Residents
2004	173	213.8
2005	264	320.2
2006	225	267.5
2007	202	235.6
2008	176	201.3

INDICATOR 10: PNEUMOCONIOSIS MORTALITY

Background

From 1990 through 1999, pneumoconiosis was an underlying or contributing cause of more than 30,000 deaths in the United States, for an overall age-adjusted annual mortality rate of 15.8 per one million residents. Except for asbestosis, mortality from most kinds of pneumoconiosis has gradually declined over the past three decades.[23]

Montana Results

The Department of Public Health and Human Services, collects death certificate information on underlying and contributing causes of death. In Montana in 2008, there were 15 reported mortalities from pneumoconiosis, for an annual mortality rate of 20.3 per one million residents. Deaths due to pneumoconiosis are usually undercounted on death certificates because of the lack of recording and lack of recognition due to the long latency between exposure and onset of symptoms. The presence of pneumoconiosis symptoms are also difficult to identify and diagnose.[24]

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23 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"
24 Ibid.

Figure 10.1

Annual Age Standardized Rate of Workers Mortality with Pneumoconiosis from Asbestos in MT, 2004-2008

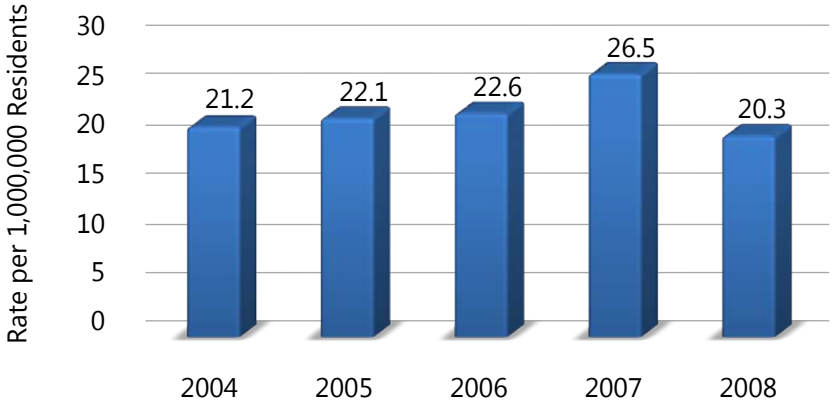

Table 10.1

Mortality from or with Pneumoconiosis in MT, 2004-2008

Year	Number of Mortalities from or with Pneumoconiosis	Age Standardized Mortality Rate per 1,000,000 Residents
2004	17	21.2
2005	18	22.1
2006	19	22.6
2007	23	26.5
2008	15	20.3

INDICATOR 11: ACUTE WORK-RELATED PESTICIDE POISONINGS REPORTED TO POISON CONTROL CENTERS

Background

An estimated one billion pounds of pesticides, contained in more than 16,000 pesticide products, are used each year in the United States. The nation relies on the use of pesticides to protect food, control disease and deter undesired insects, plants, animals or fungi. Pesticides can cause harm to people and the environment. They present adverse health effects if used heavily or over extended periods of time. Agricultural workers and those applying pesticides have the highest risk of over-exposure. The Environmental Protection Agency (EPA) estimates that 20,000 to 40,000 work-related pesticide poisoning cases will occur each year.[25]

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is the main law that regulates pesticides in the United States. The EPA regulates or enforces this law and the current penalty for violating the law ranges from $500 to $1000. Employers are also subject to EPA's Worker Protection Standards (WPS) and must provide their employees with the proper protective equipment and pesticide safety training.

Montana Results

The Montana Department of Agriculture has an established cooperative agreement with the EPA and has assumed the primary responsibility for regulating pesticides in Montana. Pesticide users in Montana must register their use of pesticides with the Department of Agriculture and if they fail to do so, they can lose their certification or are subject to a fine.[26]

Prevention and education efforts are ongoing in Montana. Currently, Montana State University has a "Pesticide Safety Education Program" that provides a manual for pesticide use. The manual outlines pesticide management, types of pesticides, pesticide toxicology, first aid, personal protection against pesticides, environmental concerns, and pesticide laws and regulations.[27]

Reported pesticide poisoning cases in Montana declined from 2007 to 2008, from a rate of 3.1 to 1.7 per 100,000 employed ages 16 years and older. The 2008 rate is slightly higher than the national rate of 1.5 for the same year.

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25 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"
26 Montana State University, "Montana Private Pesticide Certification Manual", http://www.pesticides.montana.edu/Reference/PATManual08.pdf
27 Ibid.

Figure 11.1

Rate of Work-Related Pesticide Poisonings in MT and US, 2004-2008

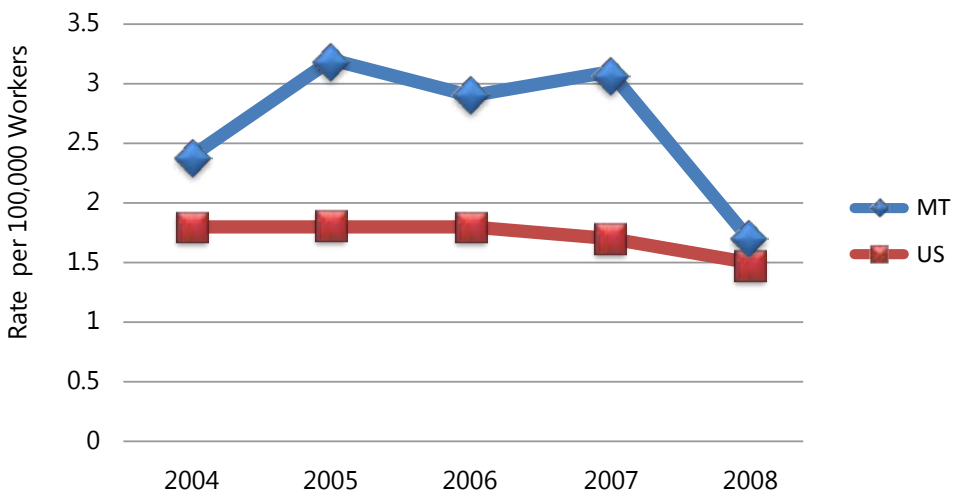

Table 11.1

Number (Rate per 100,000 Workers) of Work-Related Pesticide Poisonings Reported to Poison Control Centers in MT and US, 2004-2008

Year	MT	US
2004	11 (2.4)	2,476 (1.8)
2005	15(3.2)	2,593 (1.8)
2006	14 (2.9)	2,560 (1.8)
2007	15 (3.1)	2,458 (1.7)
2008	8 (1.7)	2,171 (1.5)

INDICATOR 12: INCIDENCE OF MALIGNANT MESOTHELIOMA

Background

Mesothelioma is a rare, fatal cancer of the lining that surrounds the chest and abdominal cavities. Approximately 2,500 people die annually of malignant mesothelioma nationally. The primary contributing cause of mesothelioma is the presence or exposure to asbestos (90% of cases). The onsets of most of these cases do not occur until 20 to 40 years after exposure.[28]

The Environmental Protection Agency (EPA) implemented a ban of many uses of asbestos in the United States in 1999. However, approximately 1.3 million workers continue to be exposed directly or indirectly to asbestos in many industries. Additionally, materials containing asbestos have been found in hundreds of thousands of schools, public buildings and residential dwellings throughout the country.[29]

Montana Results

In September 2005, the Montana Department of Public Health & Human Services (DPHHS) published a document entitled, "Mesothelioma in Montana". The report outlines the history and major sources of asbestos use in Montana.

Vermiculite Mountain, outside of Libby, had the largest vermiculite mine in the state from the 1920s until 1990, providing over 80% of the world's vermiculite at one time. Unfortunately, most of the vermiculite was contaminated with asbestos. Many residents of Montana who mined, processed or transported the vermiculite and asbestos ores, had high exposure to these minerals.[30]

From 2004 to 2008, an average of 14 cases of malignant mesothelioma per year were reported in Montana. A high of 18 cases were reported in 2004 and a low of 11 cases were reported in 2007 and 2008. The rate per one million residents declined from 24.0 to 14.0 during the same time period.

The counties with the highest number of mesothelioma cases between 1979 and 2002 were Cascade (28), Yellowstone (23), Flathead (16), Missoula (16) and Lincoln (12). Lincoln, Cascade and Rosebud counties had the highest mesothelioma rates per population, while Gallatin and Yellowstone counties had the lowest rates.[31]

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28 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010."
29 Ibid.
30 Montana Department of Public Health and Human Services, "Mesothelioma in Montana", http://www.dphhs.mt.gov/PHSD/cancer-control/MesotheliomainMontanaSeptember2005.
31 Ibid.

Figure 12.1

Annual Incidence Rate of Malignant Mesothelioma in MT, 2004-2008

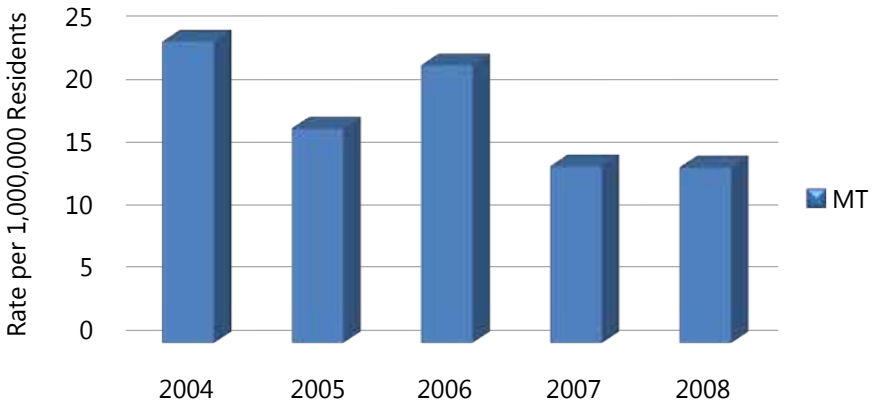

Table 12.1

Malignant Mesothelioma Cases in MT, 2004-2008

Year	Number of Malignant Mesothelioma Cases	Annual Incidence Rate per 1,000,000 Residents
2004	18	24.0
2005	13	17.1
2006	17	22.1
2007	11	14.1
2008	11	14.0

INDICATOR 13: ELEVATED BLOOD LEAD LEVELS AMONG ADULTS

Background

Lead poisoning is a medical condition caused by increased levels of the heavy metal lead in the body. The high presence of lead interferes with body processes that include many organs and tissues, such as the heart, bones, intestines and kidneys. Exposure to elevated levels of lead in the workplace can cause anemia, hypertension, nerve kidney damage and lead to fertility and pregnancy problems.[32]

Lead remains a substantial health problem in the United States due to occupational and environmental exposures. Occupational exposure may occur in workers engaged in the manufacturing of storage batteries, mining of lead and zinc ores, working in firing ranges, and painting and paper hanging.[33]

The average Blood Lead Level (BLL) of the general population is less than 2 micrograms per deciliter (µg/dLk). A BLL of 25 µg/dLk or greater for adults is considered "elevated". The Occupational Safety and Health Administration (OSHA) requires employers to monitor their employee's BLLs if they are often exposed to airborne lead in the workplace. If an employee's BLL is 40 µg/dLk or greater, the employer is required to offer an annual medical exam and other medical intervention.[34]

Montana Results

Montana had 7 cases of reported BLLs of 25 µg/dLk or greater in 2008, for a rate of 1.5 cases per 100,000 employed persons. Less than five cases were reported in 2007. Montana's prevalence rate is significantly lower than the national rate, which was 7.5 in 2004. Likewise, Montana's rate is lower than other nearby states. For example, in 2004, Wyoming's rate was 10.7, Oregon's rate was 4.1, and Washington's rate was 2.2.

Montana's data gathering system does not distinguish whether reported cases are specifically occupational, so we can only infer that the cases above are work-related.

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32 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010."
33 Ibid.
34 Ibid.

Table 13.1

Elevated Adult Blood Lead Levels in MT, 2004-2008

Year	Annual Number of Residents with Blood Lead levels ≥25 µg/dL	Annual Prevalence Rate per 100,000 Employed Persons with Blood Lead Levels ≥25 µg/dL
2004	8	1.7
2005	<5	*
2006	6	1.2
2007	<5	*
2008	7	1.5

* NOT STATISTICALLY SIGNIFICANT

INDICATOR 14: WORKERS EMPLOYED IN INDUSTRIES WITH HIGH RISK FOR OCCUPATIONAL MORBIDITY

Background

In 2003, the Bureau of Labor Statistics (BLS) estimated there were 4.4 million workplace injuries and illnesses in the private sector, for an estimated incidence rate of 5.0 cases per 100 full-time workers. In 2008, the estimated incidence rate dropped to 3.9 cases per 100 full-time workers. Thirty-seven industries were identified as having significantly higher injury and illness rates in 2003, or were at "high risk"; fifty-five industries were identified as "high risk" in 2008. Industries are considered "high risk" for occupational morbidity if their injury and illness rates are greater than 10 cases per 100 full-time workers, or more than twice the national injury and illness rate.[35] Approximately 6.6% of workers in the United States were employed in "high risk" industries in 2008.

The top five "high risk" industries in the United States in 2008, by number of employees were:

- Nursing and residential care (39%)
- Special Food Services (8%)
- Air Transportation (6%)
- Architectural and Structural Metals Manufacturing (5%)
- Veterinary Services (4%)

Montana Results

Montana had an estimated 23,893 workers, or 6.6% of the workforce employed in industries identified as "high risk" for morbidity in 2008. In 2005, 6.6% of Montana's workforce was in "high risk" industries, which compared to 8.5% in Oregon and 4.8% in Wyoming for the same year. The majority of workers in Montana in 2008 at "high risk" for morbidity (70%) were employed in the industries of:

- Nursing and residential care (10,997 or 46%)
- Couriers and messengers (1,733 or 7%)
- Air Transportation (1,521 or 6%)
- Veterinary Services (1,400 or 6%)
- Skiing Facilities (1,211 or 5%).

35 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"

Table 14.1

Percentage of Workers Employed in Industries with High Risk for Occupational Morbidity in MT and US, 2004-2008

Year	MT	US
2004	6.8	6.6
2005	6.6	6.6
2006	6.5	6.5
2007	6.4	6.4
2008*	6.6	6.6

* INDUSTRY MIX CHANGED BEGINNING IN 2008

INDICATOR 15: WORKERS EMPLOYED IN OCCUPATIONS WITH HIGH RISK FOR OCCUPATIONAL MORBIDITY

Background

In 2003, BLS estimated there were 1.3 million injuries and illnesses that resulted in "days away from work", for an estimated rate of 1.3 cases per 100 full-time employees. In 2008, the number of injuries and illnesses decreased to 1.1 million and the rate decreased to 1.1 per 100 full-time employees. Eighty-three occupations were identified as having significantly higher injury and illness rates in 2003, or were at "high risk"; one hundred and twenty-five occupations were identified as "high risk" in 2008. Occupations considered at high risk for morbidity had injury and illness rates that exceeded 2.6 per 100 full-time workers, or more than two times the national rate.[36] Approximately 24.1% of workers in the United States were employed in these "high risk" occupations in 2008.

The top five "high risk" occupations in the United States in 2008, by number of employees are:

- Construction trades (21%)
- Building and ground maintenance (15%)
- Motor vehicle operators (14%)
- Material moving workers (12%)
- Healthcare support (10%)

Montana Results

Montana had an estimated 82,571 workers, or 26.6% of the workforce, employed in occupations that were at "high risk" for morbidity in 2008. This compares to 14.5% of Montana's workforce employed in "high risk" occupations in 2003, although it should be noted that the occupation mix in 2008 was different. The 2008 rate of 26.6% was greater than the national percentage of 24.1%. In 2005, 14.8% of Montana's workforce was in "high risk" occupations, which compared to 13.1% in Wyoming and 5.4% in Alaska for the same year.

The majority of workers in Montana in 2008 at "high risk" for morbidity (76%) were employed in the occupations of:

- Construction trades (21,755 or 26%)
- Motor Vehicle Operators (11,842 or 14%)
- Building and grounds maintenance (11,677 or 14%)
- Healthcare support (10,326 or 13%)
- Material movers (7,245 or 9%).

36 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"

Table 15.1

Percentage of Workers Employed in Occupations with High Risk for Occupational Morbidity in MT and US, 2004-2008

Year	MT	US
2004	14.5	12.4
2005	14.8	12.6
2006	14.5	13.0
2007	13.8	12.8
2008*	26.6	24.1

*OCCUPATION MIX CHANGED BEGINNING IN 2008

INDICATOR 16: WORKERS EMPLOYED IN INDUSTRIES AND OCCUPATIONS WITH HIGH RISK FOR OCCUPATIONAL MORTALITY

Background

In the United States, each year between 2004 and 2008, there were over 5,000 work-related fatalities reported to the Census of Fatal Occupational Injuries Program, administered by the Bureau of Labor Statistics (BLS). Thirty industries and fifty-seven occupations had fatality rates greater than 9.5 per 100,000 workers (more than double the national rate of 4.0), and were classified as "high risk" for occupational mortality. The fatality rate decreased to 3.8 in 2008 and forty industries and sixty-two occupations were classified as "high risk".[37] Approximately 16.6% of workers in the United States were employed in these "high risk" industries in 2008 and 13.0%.

The top 5 "high risk" industries nationally for occupational mortality, by number of workers in 2008, were:

- Construction (51%)
- Truck transportation (10%)
- Landscaping services (6%)
- Crop production (5%)
- Animal production (4%)

The top 5 "high risk" occupations nationally for occupational mortality, by number of worker in 2008 were:

- Driver/sales workers and truck drivers (20%)
- Construction laborers (10%)
- Grounds maintenance workers (7%)
- Electricians (5%)
- Security guards and gaming surveillance officers (5%)

37 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"

Montana Results

In Montana, 27% of the workforce, or 110,875 workers, were employed in industries at "high risk" for occupational mortality and 20% or 80,925 were employed in occupations at "high risk" for occupational mortality, in 2008. This was greater than the national percentage of 17% for industries and 13% for occupations for the same year. In 2005, 26.5% of Montana's workforce was in "high risk" industries and 17.1% in "high risk" occupations, which compared to 30.4% and 22.4% respectively in Wyoming and 13.6% and 9.8% in Washington for the same year.

The majority of Montana workers that were employed in industries at "high risk" for mortality (80%) were employed in:

- Construction (47,504 or 42.8%)
- Animal production (24,498 or 22.1%)
- Crop production (6,802 or 6.1%)
- Truck transportation (5,515 or 5.0%)
- Logging (3,992 or 3.6%)

The majority of Montana works that were employed in occupations at "high risk" for mortality (58.6%) were employed as:

- Farmers and ranchers (21,686 or 26.8%)
- Driver, sales worker and truck drivers (11,324 or 14.0%)
- Construction laborers (7,002 or 8.7%)
- Agricultural workers (4,171 or 5.2%)
- Grounds maintenance workers (3,317 or 4.1%)

Table 16.1

Workers Employed in Industries and Occupations at High Risk for Occupational Mortality in MT and US, 2004-2008

Year	% of Workers Employed in High Risk Industries MT	% of Workers Employed in High Risk Industries US	% of Workers Employed in High Risk Occupations MT	% of Workers Employed in High Risk Occupations US
2004	25.8	15.7	17.0	10.8
2005	26.5	16.0	17.1	11.2
2006	27.4	16.3	17.9	11.4
2007	25.2	16.3	16.7	11.4
2008*	27.4	16.6	20.0	13.0

*INDUSTRY/OCCUPATION MIX CHANGED BEGINNING IN 2008

INDICATOR 17: OCCUPATIONAL SAFETY AND HEALTH PROFESSIONALS

Background

Occupational safety and health professionals include occupational and environmental medicine physicians, occupational health nurses, industrial hygienists, safety professionals, and occupational health psychologists. They are board certified through the American College of Occupational and Environmental Medicine (ACOEM), American Association of Occupational Health Nurses (AAOHN), American Industrial Hygiene Association (AIHA), and the American Society of Safety Engineers (ASSE), respectively.

Occupational safety and health professionals identify hazardous conditions and observe materials and practices in the workplace. They help employers and workers reduce or eliminate the risks of the hazards identified. It is important for a state to have a sufficient number of occupational safety and health professionals to implement safety and health preventative measures in the workplace.[38]

Montana Results

In 2008 the number of occupational safety and health professionals in Montana included 7 occupational medicine physicians, 11 ACOEM members, 7 occupational health nurses, 8 AAOHN members, 23 industrial hygienists, 26 AIHA members, 33 safety professionals and 120 ASSE members.

38 Council of State and Territorial Epidemiologists, "Introduction and Guide to the Data Tables for Occupational Health Indicators, 2010"

Table 17.1

Number (rate per 100,000 workers) of Occupational Safety and Health Professionals in MT, 2004-2008

	2004	2005	2006	2007	2008
Occupational Medicine Physicians	5 (1.1)	5 (1.1)	5 (1.0)	6 (1.2)	7 (1.5)
ACOEM Members	8 (1.7)	8 (1.7)	9 (1.8)	10 (2.0)	11 (2.3)
Occupational Health Nurses	5 (1.1)	6 (1.3)	6 (1.2)	6 (1.2)	7 (1.5)
AAOHN Members	8 (1.7)	10 (2.1)	8 (1.6)	7 (1.4)	8 (1.7)
Industrial Hygienists	16 (3.5)	16 (3.4)	18 (3.7)	21 (4.3)	23 (4.8)
AIHA Members	31 (6.7)	27 (5.7)	27 (5.5)	17 (3.5)	26 (5.4)
Safety Professionals	18 (3.9)	26 (5.5)	26 (5.3)	28 (5.7)	33 (6.9)
ASSE Members	95 (20.6)	118 (24.8)	103 (19.1)	94 (19.1)	120 (25.0)

INDICATOR 18: OSHA ENFORCEMENT ACTIVITIES

Background

The United States Department of Labor, Occupational Safety and Health Administration (OSHA), conducts investigations and inspections at worksites to ensure compliance with employee safety and health standards and regulations. Investigations and inspections typically occur at worksites in the event of work-related fatal and non-fatal injuries, hospitalizations, employee complaints and outside referrals. Random inspections are also conducted at high-risk worksites.[39]

Montana Results

OSHA jurisdiction in Montana includes private and federal employers and employees. The Montana Safety Culture Act and the Montana Occupational Safety and Health Act require safety and health inspections of workplaces of public employers.

In 2008, there were over 40,000 establishments under OSHA jurisdiction in Montana and OSHA inspected just over 300 (0.8%), down from a high of 487 (1.2%) inspections in 2004. The number of Montana covered employees eligible for inspection was around 360,000 in 2008, compared to about 330,000 in 2004. In 2004, OSHA inspected the work areas of 3.2% of covered employees eligible for inspection.

The Montana Department of Labor and Industry's Safety and Health Bureau (SHB), in accordance with OSHA requirements, currently conducts 200 to 250 inspections per year out of approximately 2,100 single public entities under their jurisdiction. SHB, through a grant from OSHA, will provide at an employer's request, a confidential comprehensive safety and health consultation at no cost.[40]

39 Montana Safety and Health Bureau. http://erd.dli.mt.gov/safetyhealth/occsh.asp 2010
40 Ibid.

Table 18.1

Establishments under OSHA Jurisdiction Inspected and Employees with Inspected Work Areas by OSHA in MT, 2004-2008

Year	Establishments under Jurisdiction	Establishments Inspected, # (%)	Covered Employees Eligible for Inspection	Covered Employees Inspected, # (%)
2004	39,242	487 (1.2)	329,060	10,575 (3.2)
2005	37,765	292 (0.8)	338,542	7,767 (2.3)
2006	38,838	375 (1.0)	350,193	-
2007	40,176	349 (0.9)	360,351	-
2008	40,708	308 (0.8)	360,338	-

INDICATOR 19: WORKERS' COMPENSATION BENEFITS

Background

Workers' compensation is a state-based social insurance program that covers work-related injuries and illnesses. Benefits include lost wages, related medical expenses, disability payments, and survivor benefits. Amounts of paid benefits represent the direct financial burden of work-related injuries and illnesses.

A 'covered worker' is defined as a worker who is eligible for workers' compensation benefits in the event of a work-related injury or illness. Workers who may not be covered by state workers' compensation include those who are self-employed, corporate executives, federal employees, small business owners, farmers and agricultural workers. Each state has different coverage requirements and benefit systems.[41]

Montana Results

Montana Code Annoted (MCA) requires mandatory workers' compensation coverage for "any person in the state in service of an employer specified by law" (39-71-118, MCA). This includes, for example, agricultural workers, undocumented workers, minors, part-time and full-time employees, and elected and appointed paid public officers. Montana statute does provide for 26 exemptions from coverage, including independent contractors, household or domestic workers, barbers and cosmetologists, respite care and companionship services, to name a few.

In Montana, the total indemnity (wage loss) and medical benefits paid in 2008 was $252.6 million, which represented a 4.0% increase from 2007. Medical benefits increased 8.7% between 2007 and 2008, while wage loss benefits decreased 2.1%. Medical benefits accounted for 59% of all benefits paid. In Montana the average benefit paid per covered worker was $596, compared to the national average of $424. Montana had an increase in benefits paid from 2004 to 2008, while nationally, benefits decreased from 2004 to 2006 and then increased again from 2006 to 2008.[42]

It should be noted that benefits reported in this section reflect all benefits paid within a calendar year for all dates of injury.

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41 Montana Department of Labor and Industry, Employment Relations Division, "Workers' Compensation Annual Report" Fiscal year 2009

42 National Academy of Social Insurance, "Workers' Compensation: Benefits, Coverage, and Costs, 2008", September 2010

Figure 19.1

Average Workers' Compensation Benefit Paid per Covered Worker in MT and US, 2004-2008

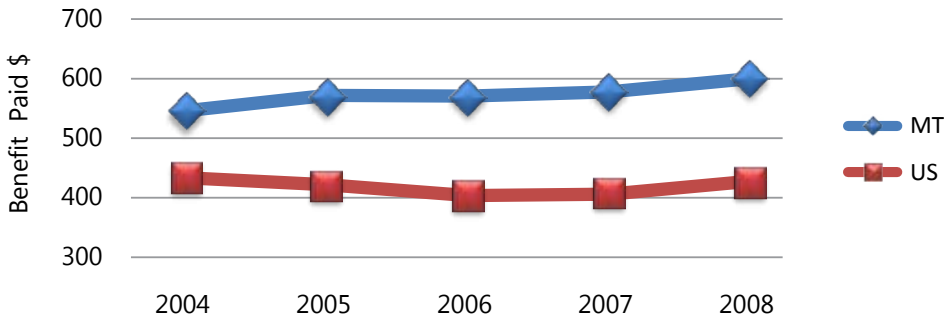

Table 19.1

Average Workers' Compensation Benefit Paid per Covered Worker in MT and US, 2004-2008

	Total Benefits Paid in Thousands ($)		Benefit Paid per Covered Worker ($)	
Year	MT	US	MT	US
2004	$211,460	$52,892,469	$542	$430
2005	$227,321	$52,371,521	$568	$418
2006	$234,247	$51,003,712	$567	$400
2007	$242,930	$51,876,858	$574	$402
2008	$252,648	$54,209,118	$596	$424

INDICATOR 20: HOSPITALIZATIONS FOR WORK-RELATED LOW BACK DISORDERS

Background

Each year, 15 to 20% of Americans report back pain, which results in over 100 million workdays lost and over 10 million visits to physicians. Furthermore, data from the National Health Interview survey estimates that two-thirds of all low back pain cases are attributable to occupational activities. Back pain represents about 20% of workers' compensation claims, yet comprises almost 40% of the costs.[43]

Hospitalizations for work-related back disorders have serious and costly effects in the workplace, including: higher medical costs, significant functional impairment and disability, high absenteeism, reduced work performance and lost productivity. Implementing awareness and prevention efforts in the workplace may reduce the incidence and costs of low-back claims in occupational health.[44]

Montana Results

Montana had 70 hospitalizations reported in 2008 due to work-related low back disorders, down from a high of 131 in 2005. This is a rate of 14.6 per 100,000 workers in 2008 and a rate of 27.5 in 2005. The number of reported hospitalizations declined 25% between 2007 and 2008.

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43 "Occupational Health Indicators: A Guide to Tracking Occupational Health Conditions and Their Determinants. Council of State and Territorial Epidemiologists, updated May 2010." Available at www.cste.org.
44 Ibid.

Figure 20.1

Annual Rate of Hospitalizations for Work-Related Low Back Disorders in MT, 2004-2008

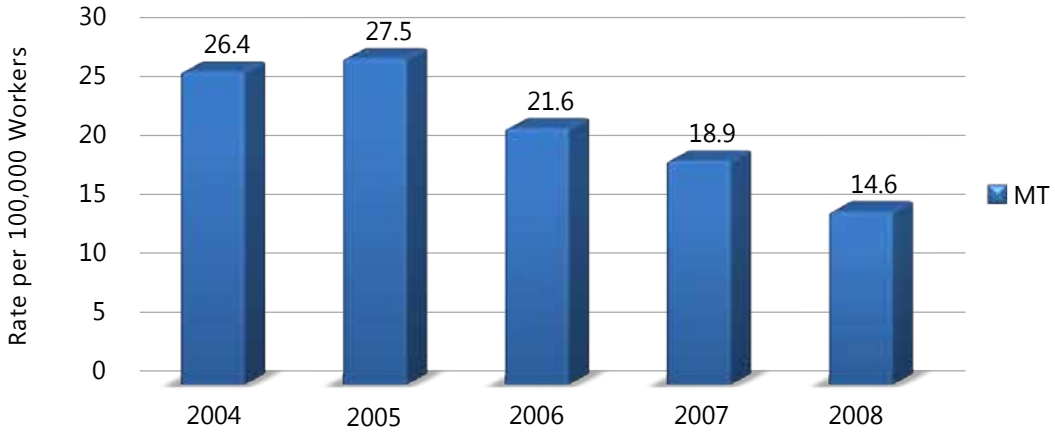

Table 20.1

Work-Related Hospitalizations from Low Back Disorders in MT, 2004-2008

Year	Annual Number of Hospitalizations for Low Back Disorders	Annual Rate per 100,000 Workers
2004	122	26.4
2005	131	27.5
2006	105	21.6
2007	93	18.9
2008	70	14.6

APPENDIX A: Montana Summary of Occupational Health Indicators

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Demographics					
Employed Persons	462,000	476,000	487,000	492,000	481,000
P1. Percentage of civilian workforce unemployed	4.9	4.4	3.6	3.6	5.2
P2. Percentage of civilian employment self-employed	14.3	13.5	13.2	12.9	13.7
P3. Percentage of civilian employment in part-time jobs	22.5	21.2	20.1	21.1	21.2
P4. Percentage of civilian employment by number of hours worked					
<40 hours	40.3	40.8	38.2	37.8	39.3
40 hours	30.3	29.6	32.0	32.5	33.9
41+ hours	29.4	29.6	29.8	29.7	26.8
P5. Percentage of civilian employment by sex					
Males	52.4	53.4	52.4	52.0	52.4
Females	47.6	46.8	47.6	48.0	47.6
P6. Percentage of civilian employment by age group					
16 to 17	2.6	2.3	2.5	2.0	1.7
18 to 64	93.5	93.6	93.2	93.4	93.1
65+	3.9	4.1	4.2	4.6	5.2
P7. Percentage of civilian employment by race					
White	93.1	94.3	94.5	93.9	94.4
Black	0.4	0.4	0.4	0.4	0.4
Other	6.5	5.3	5.1	5.7	5.2
P8. Percentage of civilian employment by Hispanic Origin	2.2	2.2	1.9	1.8	1.6
P9. Percentage of civilian employment by industry					
Mining	0.8	0.8	1.5	1.3	0.8
Construction	10.4	11.1	10.7	10.9	10.6
Manufacturing: Durable	3.5	2.5	3.5	3.4	2.8
Manufacturing: Nondurable	1.9	1.5	1.3	1.8	1.2
Wholesale and retail trade	16.1	15.4	15.5	15.1	15.0
Transportation and utilities	4.7	4.6	4.1	3.5	4.3
Information	2.0	1.7	2.2	2.2	2.3
Financial activities	5.7	5.6	5.9	6.2	5.9
Professional and business services	6.4	7.2	7.4	7.3	7.5
Education and health services	21.0	20.3	20.0	20.9	21.3

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Demographics *(cont.)*					
Leisure and hospitality	9.9	11.4	11.0	10.2	10.3
Other Services	5.2	4.9	4.2	4.3	4.7
Public Administration	5.2	5.2	6.0	6.2	5.2
Agriculture	7.2	6.8	6.7	6.7	8.3
P10. Percentage of civilian employment by occupation					
Management, business and financial operations	16.8	15.0	15.4	15.7	17.7
Professional and related occupations	17.4	17.7	18.4	18.9	18.4
Service	17.0	19.1	17.8	16.6	18.4
Sales and related occupations	11.3	12.9	11.5	11.2	11.2
Office and administrative support	13.0	10.8	12.4	14.0	12.0
Farming, fishing, and forestry	2.7	2.5	2.2	1.4	1.5
Construction and extraction	7.5	9.3	8.6	8.9	8.3
Installation, maintenance, and repair	4.3	3.5	3.7	3.4	3.0
Production	4.5	4.0	4.0	4.1	3.8
Transportation and material moving	5.6	5.1	6.0	5.8	5.7
Indicator 1 - Nonfatal Work-Related Injuries & Illness Reported by Employers					
1.1 Estimated Annual Total Number of Work-Related Injuries and Illnesses	18,800	17,000	18,900	17,800	18,000
1.2 Estimated Annual Total Work-Related Injuries and Illness Incidence Rate per 100,000 FTEs	7,200	6,600	6,900	6,300	6,400
1.3 Estimated Annual Total Number of Cases Involving Days Away From Work	5,900	5,600	5,500	5,100	6,000
1.4 Estimated Annual Total Incidence Rate for Cases Involving Days Away From Work per 100,000 FTEs	2,300	2,200	2,000	1,800	2,100
1.5 Estimated Annual Total Number of Cases Involving More Than 10 Days Away From Work	2,130	2,180	2,050	2,080	2,020
1.6 Estimated Annual Total Incidence Rate for Cases Involving More Than 10 Days Away From Work per 100,000 FTEs	817	845	748	740	714
Indicator 2 - Work-Related Hospitalizations					
2.1 Annual Number of Work-Related Hospitalizations	505	552	542	472	266
2.2 Annual Rate of Hospitalization per 100,000 employed persons age 16 years or older	109.3	116.0	111.3	95.9	55.3
Indicator 3 - Fatal Work-Related Injuries					
3.1 Annual Number of Work-Related Traumatic Fatalities	39	50	45	54	40
3.2 Annual Fatality Rate per 100,000 employed persons age 16 years or older	8.4	10.5	9.2	11.0	8.2

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Indicator 4 - Work-Related Amputations with Days Away from Work Reported by Employers					
4.1 Estimated Annual Number of Amputations Involving Days Away from Work	-	30	30	20	90
4.2 Estimated Annual Incidence Rate of Amputations Involving Days Away from Work per 100,000 FTEs	-	10.0	11.0	7.0	31.0
Indicator 5 - State Workers' Compensation Claims for Amputations with Lost Work-Time					
5.1 Annual Number of Amputations filed with State Workers' Compensation System with >4 days away from work	30	37	21	24	18
5.2 Annual incidence rate of amputations filed with state workers' compensation system per 100,000 workers coverd with >4 days away from work	7.7	9.3	5.1	5.7	4.2
Indicator 6 - Hospitalizations for Work-Related Burns					
6.1 Annual number of work-related burn hospitalizations	5	<5	<5	<5	<5
6.2 Annual rate of work-related burn hospitalizations per 100,000 employed persons age 16 years or older	1.1	*	*	*	*
Indicator 7 - Work-Related Musculoskeletal Disorders with Days Away from Work					
7.1 Estimated annual number of all musculoskeletal disorders	2,600	2,270	1,960	1,920	2,480
7.2 Estimated annual incidence rate of all musculoskeletal disorders per 100,000 FTEs	1,000	880	717	681	878
7.3 Estimated annual number of MSDs of the neck, shoulder & upper extremities	840	590	530	500	870
7.4 Estimated annual incidence rate of disorders of neck, shoulder, and upper extremities per 100,000 FTEs	324	231	192	178	308
7.5 Estimated annual number of carpal tunnel syndrome cases	100	90	90	50	40
7.6 Estimated annual incidence rate of carpal tunnel syndrome cases per 100,000 FTEs	36	36	34	16	13
7.7 Estimated annual number of musculoskeletal disorders of the back	1,120	1,040	1,000	970	1,140
7.8 Estimated annual incidence rate of musculoskeletal disorders of the back per 100,000 FTEs	430	402	366	343	403
Indicator 8 - State Workers' Compensation Claims for Carpal Tunnel Syndrome					
8.1 Annual number of carpal tunnel syndrome cases filed with State WC with >4 days away from work	142	104	58	40	27
8.2 Annual incidence rate of carpal tunnel syndrome cases filed with State WC per 100,000 Workers Covered with >4 days away from work	36.4	26.0	14.0	9.5	6.4
Indicator 9 - Hospitalizations from or with Pneumoconiosis					
9.1.1 Annual number of total pneumoconiosis hospital discharges	173	264	225	202	176

* NOT STATISTICALLY SIGNIFICANT

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Indicator 9 - Hospitalizations from or with Pneumoconiosis *(cont.)*					
9.1.2 Annual rate of total pneumoconiosis hospital discharges per million residents	231.4	385.5	293.0	259.5	223.5
9.1.3 Annual, age-standardized, rate of total pneumoconiosis hospitalizations per million residents	213.8	320.2	267.5	235.6	201.3
9.2.1 Annual number of coal workers' pneumoconiosis hospital discharges	9	<5	<5	<5	<5
9.2.2 Annual rate of coal workers' pneumoconiosis hospital discharges per million residents	12.0	*	*	*	*
9.2.3 Annual, age-standardized, rate of coal workers' pneumoconiosis hospital discharges per million residents	11.4	*	*	*	*
9.3.1 Annual number of asbestosis hospital discharges	156	252	211	190	173
9.3.2 Annual rate of asbestosis hospital discharges per million residents	208.7	332.7	274.7	244.1	219.7
9.3.3 Annual, age-standardized, rate of abestosis hospital discharges per million residents	192.3	305.0	250.0	221.9	197.9
9.4.1 Annual number of silicosis hospital discharges	8	7	10	8	<5
9.4.2 Annual rate of silicosis hospital discharges per million residents	10.7	9.2	13.0	10.3	*
9.4.3 Annual, age-standardized, rate of silicosis hospital discharges per million residents	10.1	8.9	12.4	9.7	*
9.5.1 Annual number of other and unspecified pneumoconiosis hospital discharges	<5	<5	<5	<5	<5
9.5.2 Annual rate of other and unspecified pneumoconiosis hospital discharges per million residents	*	*	*	*	*
9.5.3 Annual, age-standardized, rate of other and unspecified pneumoconiosis hospital discharges per million residents	*	*	*	*	*
Indicator 10 - Mortality from or with Pneumoconiosis					
10.1.1 Annual number of total pneumoconiosis deaths	17	18	19	23	15
10.1.2 Annual total pneumoconiosis death rate per million residents	22.7	23.8	24.7	29.5	20.3
10.1.3 Annual, age-standardized total pneumoconiosis death rate per million residents	21.2	22.1	22.6	26.5	20.3
10.2.1 Annual number of coal workers' pneumoconiosis deaths	<5	<5	<5	<5	<5
10.2.2 Annual coal workers' pneumoconiosis death rate per million residents	*	*	*	*	*
10.2.3 Annual, age-standardized rate of coal workers' pneumoconiosis deaths per million residents	*	*	*	*	*
10.3.1 Annual number of asbestos deaths	17	16	17	23	15
10.3.2 Annual asbestosis death rate per million residents	22.7	21.1	22.1	29.5	19

* NOT STATISTICALLY SIGNIFICANT

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Indicator 10 - Mortality from or with Pneumoconiosis *(cont.)*					
10.3.3 Annual, age-standardized asbestosis death rate per million residents	21.2	19.7	20.1	25.2	19.0
10.4.1 Annual number of silicosis deaths	<5	<5	<5	<5	<5
10.4.2 Annual silicosis death rate per million residents	*	*	*	*	*
10.4.3 Annual, age-standardized silicosis death rate per million residents	*	*	*	*	*
10.5.1 Annual number of other and unspecified pneumoconiosis deaths	<5	<5	<5	<5	<5
10.5.2 Annual other and unspecified pneumoconiosis death rate per million residents	*	*	*	*	*
10.5.3 Annual, age-standardized pneumoconiosis death rate per million residents	*	*	*	*	*
Indicator 11 - Acute Work-Related Pesticide Illness and Injury Reported to Poison Control Centers					
11.1 Annual number of reported work-related pesticide poisoning cases	11	15	14	15	8
11.2 Annual incidence rate of reported work-related pesticide poisoning cases per 100,000 employed persons age 16 years or older	2.4	3.2	2.9	3.1	1.7
Indicator 12 - Incidence of Malignant Mesothelioma					
12.1 Annual number of incident mesothelioma cases	18	13	17	11	11
12.2 Annual mesothelioma incidence rate per million residents	24.0	17.1	22.1	14.1	14.0
12.3 Annual, age-standardized mesothelioma incidence rate per million residents	-	-	-	-	-
Indicator 13 - Elevated Blood Lead Levels Among Adults					
13.1.1 Annual number of residents with elevated blood lead levels (>=10 mcg/dL)	-	-	-	-	-
13.1.2 Annual prevalence rate per 100,000 employed persons	-	-	-	-	-
13.1.3 Annual number of incident cases	-	-	-	-	-
13.1.4 Annual incidence rate per 100,000 employed persons	-	-	-	-	-
13.2.1 Annual number of residents with elevated blood lead levels (>=25 mcg/dL)	8	<5	6	<5	7
13.2.2 Annual prevalence rate per 100,000 employed persons	1.7	*	1.2	*	1.5
13.2.3 Annual number of incident cases	8	<5	6	<5	7
13.2.4 Annual incidence rate per 100,000 employed persons	1.7	*	1.2	*	1.5
13.3.1 Annual number of residents with elevated blood lead levels (>=40 mcg/dL)	<5	<5	<5	<5	<5
13.3.2 Annual prevalence rate per 100,000 employed persons	*	*	*	*	*
13.2.3 Annual number of incident cases	<5	<5	<5	<5	<5
13.2.4 Annual incidence rate per 100,000 employed persons	*	*	*	*	*

* NOT STATISTICALLY SIGNIFICANT

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Indicator 14 - Workers' Employed in Industries at High Risk for Occupational Morbidity					
14.1 Number of employed persons in high morbidity risk NAICS industries	21,464	21,557	22,383	22,786	23,893
14.2 Percentage of employed persons in high morbidity risk NAICS industries	6.8	6.6	6.5	6.4	6.6
Indicator 15 - Workers' Employed in Occupations at High Risk for Occupational Morbidity					
15.1 Average number of employed persons in high morbidity risk Bureau of the Census Occupations	41,033	44,853	45,031	43,318	82,571
15.2 Percentage of employed persons in high morbidity risk Bureau of the Census Occupations	14.5	14.8	14.5	13.8	26.6
Indicator 16 - Workers' Employed in Industries & Occupations at High Risk for Occupational Mortality					
16.1 Average number of employed persons in high mortality risk Bureau of Census industries	97,046	103,274	109,157	102,065	110,875
16.2 Percentage of employed persons in high mortality risk Bureau of Census industries	25.8	26.5	27.4	25.2	27.4
16.3 Average number of employed persons in high mortality risk Bureau of Census occupations	63,966	66,402	71,232	67,411	80,925
16.4 Percentage of employed persons in high mortality risk Bureau of Census occupations	17.0	17.1	17.9	16.7	20.0
Indicator 17 - Occupational Safety & Health Professionals					
17.1 Number (Rate) of board-certified occupational physicians per 100,000 employees	5 (1.1)	5 (1.1)	5 (1.1)	6 (1.0)	7 (1.2)
17.2 Number (Rate) of ACOEM members per 100,000 employees	8 (1.7)	8 (1.7)	9 (1.8)	10 (2.0)	11 (2.3)
17.3 Number (Rate) of board-certified occupational health registered nurses per 100,000 employees	5 (1.1)	6 (1.3)	6 (1.2)	6 (1.2)	7 (1.5)
17.4 Number (Rate) of members of the AAOH per 100,000 employees	8 (1.7)	10 (2.1)	8 (1.6)	7 (1.4)	8 (1.7)
17.5 Number (Rate) of board-certified industrial hygienists per 100,000 employees	16 (3.5)	16 (3.4)	18 (3.7)	21 (4.3)	23 (4.8)
17.6 Number (Rate) of AIHA per 100,000 employees	31 (6.7)	27 (5.7)	27 (5.5)	17 (3.5)	26 (5.4)
17.7 Number (Rate) of board certified safety health professionals per 100,000 employees	18 (3.9)	26 (5.5)	26 (5.3)	28 (5.7)	33 (6.9)
17.8 Number (Rate) of ASSE membership per 100,000 employees	95 (20.6)	118 (24.8)	103 (19.1)	94 (19.1)	120 (25.0)
Indicator 18 - OSHA Enforcement Activities					
18.1 Annual number of employer establishments inspected by OSHA	487	292	375	349	308
18.2 Number of OSHA-Covered Establishments that are Eligible for OSHA Inspection (excluding mines & farms)	39,242	37,765	38,838	40,176	40,708

Montana Summary of Occupational Health Indicators	2004	2005	2006	2007	2008
Indicator 18 - OSHA Enforcement Activities *(cont.)*					
18.3 Percentage of OSHA-Covered Establishments Eligible for Inspection that were Inspected by OSHA	1.2	0.8	1.0	0.9	0.8
18.4 Annual Number of Employees whose Work Areas were Inspected by OSHA	10,575	7,767	-	-	-
18.5 Number of OSHA-Covered Employees (excluding miners & farm workers) Eligible for Inspection	329,060	338,542	350,193	360,351	360,338
18.6 Percentage of OSHA-Covered Employees Eligible for Inspection Whose Work Areas were Inspected by OSHA	3.2	2.3	-	-	-
Indicator 19 - Workers' Compensation Awards					
19.1 Total amount of workers' compensation benefits paid (in thousands)	$211,460	$227,321	$234,247	$242,930	$252,648
19.2 Average amount of workers' compensation benefits paid per covered worker	$542	$568	$567	$574	$596
Indicator 20 - Low Back Disorder Hospitalizations					
20.1 Annual number of work-related surgical low back disorder hospitalizations for persons age 16 years or older	-	-	-	-	-
20.2 Annual rate of work-related surgical low back disorder hospitalization per 100,000 employed persons age 16 years or older	-	-	-	-	-
20.3 Annual number of work-related low back disorder hospitalizations for persons age 16 years or older	122	131	105	93	70
20.4 Annual rate of work-related low back disorder hospitalization per 100,000 employed persons age 16 years or older	26.4	27.5	21.6	18.9	14.6

APPENDIX B: Indicators Limitations and Data Resources[45]

DEMOGRAPHICS

Limitations of Indicator:

Demographic and workforce characteristics are helpful to describe the workforce, but do not directly measure occupational risks or hazards.

Data Resources:

BLS Geographic Profiles of Employment and Unemployment, http://www.bls.gov/gps/home.htm
Current Population Survey (CPS) micro-data, http://dataferrett.census.gov

Limitations of Data Resources:

The Geographic Profiles data are based on the Current Population Survey (CPS), which is a monthly probability sample of households across the United States. Geographic Profiles excludes workers less than 16 years of age, active-duty members of the military, and inmates in institutions. These data may underestimate the percentage of certain racial or ethnic worker populations that do not have permanent residences, or are migratory in nature. Additional information is available at http://www.bls.gov/gps/home.htm.

INDICATOR 1

Limitations of Indicator:

Employers are required to record events that result in death, loss of consciousness, days away from work, restricted work, or medical treatment beyond first aid. They are only required to report the detailed case characteristics (e.g., nature, body part, event) when the injury or illness results in at least one day away from work.

Employers do not always record all relevant events. Also, employers are often unaware of work-related conditions for which employees have obtained medical care from their personal health care providers, and conditions that have long latencies and are diagnosed long after an employee leaves their employment.

With respect to injuries/illnesses involving days away from work, employers vary in their use of restricted work activity to reduce lost workdays among their employees with work-related conditions, thereby avoiding cases with days away from work.

Data Resources:

Annual BLS Survey of Occupational Injuries and Illnesses (SOII) http://www.bls.gov/iff.oshstate.htm

Limitations of Data Resources:

The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases.

Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees.

45 Council of State and Territorial Epidemiologists, "Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants", May 2010.

Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate state-specific estimates. Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details).

INDICATOR 2

Limitations of Indicator:

Hospital discharge records are only available for non-federal, acute care hospitals. Individuals hospitalized for work-related injuries and illnesses represent less than 10% of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Additionally, self employed individuals such as farmers and independent contractors, federal employees, railroad or long shore and maritime workers are not covered by state workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Data between states may not be comparable due to the differences in states' workers' compensation programs.

Data Resources:

Hospital discharge data
BLS Current Population Survey Data http://www.bls.gov/gps/#tables

Limitations of Data Resources:

Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. Residents of one state may be hospitalized in another state and not be reflected in his/her state's hospitalization data. All admissions are counted, including multiple admissions for a single individual. Until hospital discharge data is available in all states, aggregation of state data to produce nationwide estimates will be incomplete. Data on race/ethnicity is not collected in some states and is incomplete and/or questionable validity in others.

INDICATOR 3

Limitations of Indicator:

Fatalities of people younger than 16 may be included in the numerator but are not included in the denominator, since employment statistics are only available for those 16 years of age and older. Because the numbers of deaths among those less than 16 in any one state are small, these numbers are not broken out in the BLS tables and often do not meet the BLS publication criteria.

Census of Fatal Occupational Injuries (CFOI) reports data on work-related fatalities by the state in which the fatal incident occurred, which is not necessarily the state of death or the state of residence. The denominator data used for calculating rates is based on state of residence, thus rates may overestimate risk for a state if the fatal incidents involved victims who were out of state residents. Likewise, rates may be underestimated if fatal incidents occurred in other states. Deaths in the military are included in the counts but not the rates.

Data Resources:

Census of Fatal Occupational Injuries (CFOI) http://www.bls.gov/iff/home.htm
BLS Current Population Survey Data http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

CFOI program states are not permitted to release occupation or industry specific data when data are sparse. Such sparse data is categorized under 'others'. The CFOI program, although it has a data element for ICD codes, publishes findings according to the OIIC classification system rather than ICD. Therefore, data from CFOI may not be comparable to causes of death documented on death certificates.

INDICATOR 4

Limitations of Indicator:

Employers are required to record events that result in death, loss of consciousness, days away from work, restricted work, or medical treatment beyond first aid. They are only required to report the detailed nature of injury when the injury results in at least one day away from work. Employers do not always record all relevant events. Employers vary in their use of restricted work activity to reduce lost workdays among their employees with work-related conditions, thereby avoiding cases with days away from work.

Data Resources:

Annual Bureau of Labor Statistics (BLS) http://data.bls.gov/GQT/servlet/InitialPage
Survey of Occupational Injuries and Illnesses (SOII) http://www.bls.gov/iff.oshstate.htm

Limitations of Data Resources:

The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases.

Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees. Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate State-specific estimates.

Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details). In addition, the SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. For example, a debilitating injury that occurs on the last day of the calendar year will have no lost work-time associated with it in the SOII.

INDICATOR 5

Limitations of Indicator:

Differences in the availability of data (i.e., for lost time cases only versus all medical benefits cases) and eligibility criteria between states indicate that data for this condition should be used to evaluate trends within a state but not to make state-to-state comparisons.

Data Resources:

Workers' compensation system
National Academy of Social Insurance (NASI) http://nasi.org

Limitations of Data Resources:

Workers' compensation data are not complete, as the majority of individuals with work related illnesses and many with work-related injuries do not file for workers' compensation. Workers' compensation claims may be denied. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or long shore and maritime workers may not be covered by state workers' compensation systems.

INDICATOR 6

Limitations of Indicator:

Individuals hospitalized for work-related injuries and illnesses represent less than 10% of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or long shore and maritime workers are not covered by state workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Data between states may not be comparable due to differences in states' workers' compensation programs.

Data Resources:

Hospital discharge data
Bureau of Labor Statistics (BLS) Current Population Survey Data http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

Work-related burn injuries are experienced by employed individuals less than 16 years old, but corresponding denominator data is not readily available. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients. Residents of one state may be hospitalized in another state and not be reflected in his/her state's hospitalization data. Until hospital discharge data is available in all states, aggregation of state data to produce nationwide estimates will be incomplete. Data on race/ethnicity is not collected in some states and is incomplete and/or of questionable validity in others. Hospital Discharge records are only available for non-federal, acute care hospitals.

INDICATOR 7

Limitations of Indicator:

Employers are required to record events that result in death, loss of consciousness, days away from work, restricted work, or medical treatment beyond first aid. They are only required to report the detailed case characteristics (e.g., nature, body part, event) when the injury or illness results in at least one day away from work. Employers do not always record all relevant events.

Also, employers are often unaware of work-related conditions for which employees have obtained medical care from their personal healthcare providers, and conditions that have long latencies and are diagnosed long after an employee leaves their employment. Regarding injuries/illnesses involving days away from work, employers vary in their use of restricted work activity to reduce lost work-days among their employees with work-related conditions, thereby avoiding cases with days away from work.

Data Resources:

Survey of Occupational Injuries and Illnesses (SOII) http://www.bls.gov/iff.oshstate.htm

Limitations of Data Resources:

The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases.

Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees. Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate State-specific estimates.

Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details). In addition, the SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. For example, a debilitating injury that occurs on the last day of the calendar year will have no lost work-time associated with it in the SOII.

INDICATOR 8

Limitations of Indicator:

Differences in the availability of data (i.e., for lost time cases only versus medical benefits cases) and eligibility criteria between states indicate that data for this condition should be used to evaluate trends within a state but not to make state-to-state comparisons.

Data Resources:

Workers' compensation system
National Academy of Social Insurance (NASI) http://nasi.org

Limitations of Data Resources:

Workers' compensation data is not complete, as the majority of individuals with work-related illnesses and many with work-related injuries do not file for workers' compensation. Workers' compensation claims may be denied. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or long shore and maritime workers are not covered by state workers' compensation systems. (The length of days away from work that is required before a case will be recorded in the workers' compensation system will vary by state.)

INDICATOR 9

Limitations of Indicator:

Because pneumoconioses are typically diseases of long latency, current incidence is not necessarily indicative of current exposure, and it may be many years before reductions in occupational exposures affect the number of hospitalizations.

Data Resources:

Hospital discharge data
State population estimates from the Bureau of the Census

Limitations of Data Resources:

The number of diagnoses listed on discharge summaries may vary by regional practice patterns and by the persons completing the summaries. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to diagnose pneumoconiosis, and/or to list pneumoconiosis as a discharge diagnosis.

Residents of one state may be hospitalized in another state and not be reflected in his/her state's hospitalization data. Until hospital discharge data is available in all states, aggregation of state data to produce nationwide estimates will be incomplete.

INDICATOR 10

Limitations of Indicator:

Because pneumoconioses are typically chronic diseases with a long latency (pre-clinical period), current incidence is not necessarily indicative of current exposures, and it may be several years before reductions in exposures affect mortality. In addition, people may not die in the state in which they were exposed.

Data Resources:

Death certificate records from vital statistics agency
State population estimates from the U.S. Bureau of the Census

Limitations of Data Resources:

Causes of death listed on the death certificate and coding of those causes may be inaccurate. The number of contributing cases of death listed on the death certificate may vary by person completing the death certificate and geographic region. Death certificates identify only a small percentage of the individuals who develop pneumoconiosis. Data on race/ethnicity is not collected in some states and is incomplete and/or of questionable validity in others. The state of residence upon death may not be the state of exposure.

INDICATOR 11

Limitations of Indicator:

Poison Control Centers (PCCs) capture only a small proportion of acute occupational pesticide-related illness cases. An estimated 10%. PCCs do not systematically collect information on industry and occupation; however, cases associated with occupational exposures can be identified.

Data Resources:

Poison Control Center data
BLS Current Population Survey Data http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

Not all states have poison control centers. State health agencies may have to enter into an agreement with their state-based PCC to obtain local data, or may obtain less timely PCC data from the Toxic Exposure Surveillance System, which is administered by the American Association of Poison Control Centers.

INDICATOR 12

Limitations of Indicator:

Not all cases of malignant mesothelioma are caused by occupational exposures. Because cancer is a disease of long latency, current incidence is not indicative of current exposures and it may be many years before reductions in occupational exposures affect incidence. State of residence of the decedent may not have been the state of exposure.

Data Resources:

State-wide Cancer Registry data
State population estimates from the U.S. Bureau of the Census

Limitations of Data Resources:

Data from some existing statewide central cancer registries do not yet meet standards for data completeness and quality. Until complete cancer registry data is available in all states, aggregation of state data to produce nationwide estimates will be incomplete.

INDICATOR 13

Limitations of Indicator:

Blood Lead Levels (BLLs) reflect the contributions of acute external exposure to lead as well as the release of internal bone lead stores into the blood. For persons without significant lead body burden, a BLL is a good indicator of recent (preceding 3-5 weeks) external lead exposure. For persons with significant body burden, a single BLL may not be an accurate indicator of recent external exposure, as lead is also being released into the blood from bone stores.

Data Resources:

Reports of elevated BLLs from laboratories
BLS Current Population Survey Data

Limitations of Data Resources:

Some states do not require laboratories to report all BLLs, or have no BLL reporting requirement in place. Even with a reporting requirement, data from laboratories are frequently incomplete. Many workers with significant occupational lead exposure are not appropriately tested. An individual's lead exposure and BLL testing may be done in the same or in different states (which may not be the individual's state of residence).

Approximately 10-15% of elevated BLLs among adults can be caused by non-occupational exposures. Not all states may be able to distinguish occupationally exposed individuals from non-occupationally exposed individuals. Not all states may be able to determine both state of employment/exposure and state of residence of their reported cases.

INDICATOR 14

Limitations of Indicator:

It is possible that some new employers are not counted in the County Business Patterns mid-March survey. In addition, differences in regional industrial practices may cause the ranking of high-risk industries within a specific State to differ from those identified from national data.

Data Resources:

U.S. Census Bureau County Business Patterns (CBP) http://censtats.census.gov/cbpnaic.shtml

Limitations of Data Resources:

The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases.

Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees. Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate State-specific estimates.

Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details).

In addition, the SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. For example, a debilitating injury that occurs on the last day of the calendar year will have no lost work-time associated with it in the SOII. The CBP is based on mid-March payrolls of all employers in the United States, but does not cover farms, public administration, or the self-employed. Exact employment counts for a particular NAICS may not be provided within a State because of confidentiality issues.

INDICATOR 15

Limitations of Indicator:

Differences in regional industrial practices may cause the ranking of high-risk occupations within a specific state or industry to differ from those identified from national data.

Data Resources:

Bureau of Labor Statistics' Current Population Survey (CPS) http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

The BLS annual Survey of Occupational Injuries and Illnesses (SOII) is based on injury and illness data maintained by employers and is subject to sampling error, a function of BLS using a probability sample and not a census of all employers.

Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. The CPS can be used to estimate the private sector employment in the United States, excluding the self-employed, but may not match perfectly those workers covered in the SOII.

INDICATOR 16

Limitations of Indicator:

Differences in regional industrial practices may cause the ranking of high-risk occupations and industries within a specific State to differ from those identified from national data.

Data Resources:

Bureau of Labor Statistics' Current Population Survey (CPS) http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

The CFOI program counts suicides at work as work-related fatalities, even when the cause of death may not be due to factors at work. CFOI does not count military deaths. To be consistent with Indicators #14 and #15, this indicator has been limited to private sector workers. (Although, unlike indicators #14 and #15 self-employed are included.)

INDICATOR 17

Limitations of Indicator:

Other important occupational health specialties such as fire prevention, health physicists, ergonomists are not included.

Data Resources:

American Board of Preventive Medicine (ABPM) diplomats database (www.abprevmed.org). (#1,2)
Annual roster of members of the ACOEM (www.acoem.org). (#3,4)
American Board of Occupational Health Nurses Directory (www.abohn.org). (#5,6)
Annual roster of members of the AAOHN member directory (www.aaohn.org). (#7,8)
American Board of Industrial Hygiene (www.abih.org). (#9,10)
AIHA member directory (www.aiha.org). (#11,12)
BCSP member directory (www.bcsp.org). (#13,14)
ASSE member directory (www.asse.org). (#15,16)
Bureau of Labor Statistics Current Population Survey Data. http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

The numerator data include retired individuals and individuals who may devote the majority of their time to research and limited or no time to provision of actual preventive services. An individual may practice part-time or even full-time in the field of occupational health and not be board certified or a member of the organization representing occupational health professionals. The completeness and frequency of updating addresses varies by each organization. Members are often listed in a database by a preferred address, which may not be the address where they practice.

INDICATOR 18

Limitations of Indicator:

This indicator only measures enforcement activity and not other measures of OSHA activity such as education and compliance assistance. Because OSHA may conduct multiple inspections of the same establishment during the calendar year, the percent of establishments inspected may be slightly overestimated. In addition, if OSHA conducts multiple inspections of the same worksite during the year, the number of workers covered by OSHA inspections may be over counted.

In federal OSHA states and some OSHA state plan states, OSHA does not inspect farms with 10 or fewer employees. Agricultural establishments were excluded from the denominator in this indicator except for California and North Carolina; therefore, the percentages of establishments and employees covered may be overestimated in states that do inspect smaller farms.

Data Resources:

OSHA annual reports of total inspections
Bureau of Labor Statistics on Covered Employers and Wages (commonly referred to as the ES-202/CEW data http://www.bls.gov/cew/home.htm)

Limitations of Data Resources:

Employers participating in an OSHA Voluntary Protection Program (VPP) or the Safety and Health Achievement and Recognition Program (SHARP) are exempted from routine inspections. Excluding workers from these programs will reduce the numerator, resulting in an underestimate of the protective function. In Covered Employers and Wages data, individuals holding more than one job are counted multiple times.

INDICATOR 19

Limitations of Indicator:

This is a gross indicator of the burden of occupational injury and illness. It does not include human, noneconomic costs nor all the economic costs associated with occupational injuries and illnesses. These data are more appropriate for evaluating trends within a state rather than comparisons between states because of differences in wages and medical costs, the compensation determination, industry types and risks, and policies on permanent disability payments. Even within a state, changes in policies, wages and medical care expenses must be considered.

Data Resources:

National Academy of Social Insurance (www.nasi.org).

Limitations of Data Resources:

Workers' compensation data is not complete, as many individuals with work-related illnesses do not file for workers' compensation. Self-employed individuals (e.g. farmers, independent contractors and small business owners), corporate executives, domestic and agricultural workers may be exempt from coverage. Additionally, federal employees, railroad, long shore and maritime workers are not covered by state workers' compensation systems. Compensation award payments are frequently made over time, thus annual awards may not reflect the full cost of, injuries and illnesses for a given year.

INDICATOR 20

Limitations of Indicator:

Hospital discharge records are only available for non-federal, acute care hospitals. Many individuals with work-related injuries do not file for workers' compensation or fail to recognize work as the cause of their injury. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or long shore and maritime workers are not covered by state workers' compensation systems. The expected payer on hospital discharge records may not be accurate and reflect the actual payer.

Data between states may not be comparable due to differences in benefit adequacy in states' workers' compensation programs. Trends in the use of outpatient surgical centers may limit the interpretation of this indicator. The indicator utilizes only the first seven diagnosis and four procedure code fields to include and exclude cases. Many states have more diagnosis and procedure code fields that could be used to include and exclude cases. The indicator excludes patients hospitalized outside their state of residence.

Data Resources:

Hospital discharge data
BLS Current Population Survey Data http://www.bls.gov/opub/gp/laugp.htm

Limitations of Data Resources:

Practice patterns and benefit payment systems may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, authorize surgery and/or to list the condition as a discharge diagnosis. All admissions are counted, including multiple admissions for a single individual. Until hospital discharge data are available in all states, aggregation of state data to produce nationwide estimates will be incomplete. Data on race/ethnicity are not collected or may be incomplete in some states.

APPENDIX C: High-Risk Industries and Occupations

INDICATOR 14

'High-Risk' Industries, 2003 – 2008

The following 37 industries were identified as "high risk" because they had injury and illness rates of at least 10 cases per 100 full-time workers – twice the national injury and illness rate – according to the BLS Annual Survey in 2003. In generating Indicator 14 for years 2003 - 2008, the following NAICS codes were used to identify industries with high risk for occupational morbidity in the Census County Business Patterns data. The industry mix was updated in 2008 to 55 industries, as reflected in the removed and added industries.

NAICS Code	Industry
23813	Framing contractors
31131	Sugar manufacturing
311511	Fluid milk manufacturing
311512	Creamery butter manufacturing
31161	Animal slaughtering and processing
311821	Cookie and cracker manufacturing
312	Beverage and tobacco product manufacturing
316211	Rubber and plastic footwear manufacturing
321	Wood product manufacturing
322299	All other converted paper product manufacturing
327213	Glass container manufacturing
327331	Concrete block and brick manufacturing
32739	Other concrete product manufacturing
3312	Steel product manufacturing from purchased steel
3315	Foundries
332211	Cutlery and flatware manufacturing
33231	Plate work and fabricated structural product manufacturing
332323	Ornamental and architectural metal work manufacturing
33261	Spring and wire product manufacturing
332919	Other metal valve and pipe fitting manufacturing
332998	Enameled iron and metal sanitary ware manufacturing
332999	All other miscellaneous fabricated metal product manufacturing
333312	Commercial laundry, dry cleaning, and pressing machine manufacturing
333412	Industrial and commercial fan and blower manufacturing
333923	Overhead traveling crane, hoist, and monorail system manufacturing
3361	Motor vehicle manufacturing
33621	Motor vehicle body and trailer manufacturing
33635	Motor vehicle transmission and power train parts manufacturing
33637	Motor vehicle metal stamping
33661	Ship and boat building
4248	Beer, wine, and distilled alcoholic beverage merchant wholesalers
4811	Scheduled air transportation
4851	Urban transit systems
492	Couriers and messengers
49311	General warehousing and storage
623	Nursing and residential care facilities
7131	Amusement parks and arcades

Industries removed from the 2008 list

23813 Framing Contractors
311512 Creamery Butter Manufacturing
31161 Animal Slaughtering and Processing
311821 Cookie and Cracker Manufacturing
312 Beverage and Tobacco Product Manufacturing
316211 Rubber and Plastic Footwear Manufacturing
321 Wood Products Manufacturing
322299 All Other Converted Paper Product Manufacturing
327213 Glass Container Manufacturing
327331 Concrete Block and Brick Manufacturing
3312 Steel Product Manufacturing From Purchased Steel
332211 Cutlery and Flatware Manufacturing
33261 Spring and Wire Manufacturing
332919 Other Metal Value and Pipe Fitting Manufacturing
332998 Enameled Iron and Metal Sanitary Ware Manufacturing
3361 Motor Vehicle Manufacturing
33635 Motor Vehicle Trans. and Power Train Parts Manufacturing.
4851 Urban Transit Systems
49311 Warehousing and Storage
7131 Amusement Parks and Arcades

Industries added to the 2008 list

115111 Cotton Ginning
311611 Animal Slaughtering Except Poultry
311613 Rendering and Meat Byproduct Processing
311711 Seafood Canning
31211 Soft Drink and Ice Manufacturing
3161 Leather and Hide Tanning and Finishing
321214 Truss manufacturing
32192 Wood Container and Pallet Manufacturing
32199 All Other Wood Product Manufacturing
326212 Tire Retreading
327113 Porcelain Electrical Supply Manufacturing
327332 Concrete Pipe Manufacturing
33122 Rolling and Drawing of Purchased Steel
331314 Secondary Smelting and Alloying of Aluminum
3323 Architectural and Structural Metals Manufacturing
332439 Other Metal Container Manufacturing
322618 Other Fabricated Wire Product Manufacturing
332721 Precision Turned Product Manufacturing
332997 Industrial Pattern Manufacturing
33311 Agricultural Implement Manufacturing
33321 Sawmill and Woodworking Machinery Manufacturing
333291 Paper Industry Machinery Manufacturing
333294 Food Product Machinery Manufacturing
33636 Motor Vehicle Seating and Interior Trim Manufacturing
337124 Metal Household Furniture Manufacturing

337127 Institutional Furniture Manufacturing
45391 Pet and Pet Supplies Stores
481 Air Transportation
48832 Marine Cargo Handling
4889 Other Support Activities for Transportation
49312 Refrigerated Warehousing and Storage
54194 Veterinary Services
6219 Other Ambulatory Health Care Services
6223 Specialty Hospitals Except Psychiatric and Substance Abuse
7112 Spectator Sports
71392 Skiing Facilities
7223 Special Food Services

Technical Note:

The list of high-risk industries is updated every five years to reflect changes in industries with high risk for occupational morbidity over time. For example, the industries at high risk for occupational morbidity according to the 2008 BLS Annual Survey differ somewhat from the high-risk industries identified in the 2003 BLS Annual Survey. It is not anticipated that year-to-year changes will have significant effect on comparative or trend analyses, but these changes will be evaluated.

INDICATOR 15

'High Risk' Occupations, 2003 – 2008

The following 83 occupations were identified as "high risk" because they had injury and illness1 rates that exceeded 2.6 per 100 full-time workers – twice the national injury and illness rate – according to the BLS Annual Survey in 2003. In generating Indicator 15 for 2003 – 2008, the following Census codes were used to identify occupations with high risk for morbidity in the Current Population Survey (CPS) data. The occupation mix was updated in 2008 to 125 occupations, as reflected in the removed and added occupations.

Occupation Code

2700 Actors
3400 Emergency medical technicians and paramedics
3600 Nursing, psychiatric, and home health aides
3700 First line supervisors/managers of correctional officers
3740 Fire fighters
3750 Fire inspectors
4050 Combined food preparation and serving workers, including fast food
4120 Food servers, non-restaurant
4160 Food preparation and serving related workers, all others
4240 Pest control workers
4550 Transportation attendants
5410 Reservation and transportation ticket agents and travel clerks
5500 Cargo and freight agents
6020 Animal breeders
6130 Logging workers
6230 Carpenters
6260 Construction laborers
6300 Paving, surfacing, and tamping equipment operators

6310 Pile driver operators
6360 Glaziers
6400 Insulation workers
6500 Reinforcing iron and rebar workers
6520 Sheet metal workers
6530 Structural iron and steel workers
6600 Helpers, construction trades
6750 Septic tank servicers and sewer pipe cleaners
6760 Miscellaneous construction and related workers
6800 Derrick, rotary drill, and service unit operators, oil gas, and mining
6820 Earth drillers, except oil and gas
6910 Roof bolters, mining
6920 Roustabouts, oil and gas
6930 Helpers, extractive workers
6940 Other extractive workers
7050 Electrical and electronics installers/repairers, transportation equipment
7100 Electrical and electronics installers/repairers, industrial and utility
7140 Aircraft mechanics and service technicians
7220 Heavy vehicle and mobile equipment service technicians and mechanics
7260 Misc. vehicle and mobile equipment mechanics, installers, and repairers
7310 Heating, air conditioning, and refrigeration mechanics, installers, and repairers
7320 Home appliance repairers
7340 Maintenance and repair workers, general
7350 Maintenance workers, machinery
7420 Telecommunications line installers and repairers
7560 Riggers
7600 Signal and track switch repairers
7610 Helpers of installation, maintenance, and repair workers
7710 Aircraft structure, surfaces, rigging, and system assemblers
7730 Engine and other machine assemblers
7830 Food/tobacco roasting, baking, and drying machine operators, tenders
7850 Food cooking machine operators, tenders
7920 Extruding/drawing machine setters, operators, tenders-metal and plastic
7940 Rolling machine setters, operators, tenders-metal and plastic
8010 Lathe and turning machine tool setters, operators, tenders-metal and plastic
8020 Milling and planing machine setters, operators, tenders-metal and plastic
8040 Metal furnace and kiln operators, tenders
8100 Molders and molding machine setters, operators, tenders-metal and plastic
8120 Multiple machine tool setters, operators, tenders-metal and plastic
8160 Layout workers-metal and plastic
8230 Bookbinders and bindery workers
8430 Extruding and forming machine setters, operators, tenders-synthetic & glass fibers
8530 Sawing machine setters, operators, tenders-wood
8540 Woodworking machine setters, operators, tenders, except sawing
8650 Crushing, grinding, polishing, mixing, and blending workers
8710 Cutting workers
8720 Extruding, forming, pressing, and compacting machine setters, operators, tenders
8900 Cooling and freezing equipment operators, tenders

8920 Molders, shapers, and casters, except metal and plastic
8940 Tire builders
8950 Helpers for production workers
8960 Production workers, all other
9110 Ambulance drivers & attendants except EMT
9130 Driver/sales workers and truck drivers
9230 Railroad brake, signal, and switch operators
9240 Railroad conductors and yardmasters
9300 Sailors and marine oilers
9330 Ship engineers
9420 Other transportation workers
9500 Conveyor operators, tenders
9620 Laborers and freight, stock, and material movers-hand
9630 Machine feeders and offbearers
9720 Refuse and recyclable material collectors
9730 Shuttle car operators
9750 Material moving workers, all other

Occupations removed from the 2008 list

2700 Actors
3700 1st line supervisors /managers of correctional officers
3740 Fire fighters
3750 Fire inspectors
4050 Combined food prep. and serving workers, including fast food
4160 Food preparation and serving related workers, all others
5500 Cargo and freight agents
6020 Animal breeders
6130 Logging workers
6600 Helpers, construction trades
6750 Septic tank servicers and sewer pipe cleaners
6800 Derrick, rotary drill, and service unit operators, oil, gas, and mining
6820 Earth drillers, except oil and gas
6920 Roustabouts, oil and gas
6930 Helpers, extraction workers
6940 Other extraction workers
7050 Electrical and electronics installers/repairers, transportation equipment
7100 Electrical and electronics installers/repairers, industrial and utility
7220 Heavy vehicle and mobile equipment service technicians and mechanics
7260 Misc. vehicle and mobile equipment mechanics, installers, and repairers
7710 Aircraft structure, surfaces, rigging, and system assemblers
7730 Engine and other machine assemblers
7830 Food/tobacco roasting, baking, and drying machine operators, tenders
7850 Food cooking machine operators, tenders
7920 Extruding/drawing machine setters, operators, tenders-metal and plastic
7940 Rolling machine setters, operators, tenders-metal and plastic
8010 Lathe and turning machine tool setters, operators, tenders-metal and plastic
8020 Milling and planing machine setters, operators, tenders-metal and plastic
8040 Metal furnace and kiln operators, tenders

8100 Molders and molding machine setters, operators, tenders-metal and plastic
8120 Multiple machine tool setters, operators, tenders-metal and plastic
8230 Bookbinders and bindery workers
8430 Extruding and forming machine setters, operators, tenders-synthetic and glass fibers
8540 Woodworking machine setters, operators, tenders, except sawing
9230 Railroad brake, signal, and switch operators
9330 Ship engineers
9420 Other transportation workers

Occupations added to the 2008 list

2720 Athletes, coaches, umpires, and related workers
3610 Occupational therapist assistants and aides
3620 Physical therapist assistants and aides
3630 Massage therapists
3640 Dental assistants
3650 Medical assistants and other healthcare support occupations
3850 Police and sheriff's patrol officers
3860 Transit and railroad police
3900 Animal control workers
4200 First-line supervisors/managers of housekeeping and janitorial workers
4210 First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers
4220 Janitors and building cleaners
4230 Maids and housekeeping cleaners
4250 Grounds maintenance workers
4340 Animal trainers
4350 Nonfarm animal caretakers
4530 Baggage porters, bellhops, and concierges
5530 Meter readers, utilities
6120 Forest and conservation workers
6210 Boilermakers
6220 Brickmasons, blockmasons, and stonemasons
6240 Carpet, floor, and tile installers and finishers
6250 Cement masons, concrete finishers, and terrazzo workers
6320 Operating engineers and other construction equipment operators
6330 Drywall installers, ceiling tile installers, and tapers
6350 Electricians
6420 Painters, construction and maintenance
6430 Paperhangers
6440 Pipelayers, plumbers, pipefitters, and steamfitters
6460 Plasterers and stucco masons
6510 Roofers
6730 Highway maintenance workers
6840 Mining machine operators
7150 Automotive body and related repairers
7160 Automotive glass installers and repairers
7200 Automotive service technicians and mechanics
7210 Bus and truck mechanics and diesel engine specialists
7300 Control and valve installers and repairers

7330 Industrial and refractory machinery mechanics
7360 Millwrights
7410 Electrical power-line installers and repairers
7430 Precision instrument and equipment repairers
7510 Coin, vending, and amusement machine servicers and repairers
7520 Commercial divers
7540 Locksmiths and safe repairers
7550 Manufactured building and mobile home installers
7620 Other installation, maintenance, and repair workers
8140 Welding, soldering, and brazing workers
8150 Heat treating equipment setters, operators, and tenders, metal and plastic
8200 Plating and coating machine setters, operators, and tenders, metal and plastic
8210 Tool grinders, filers, and sharpeners
8220 Metalworkers and plastic workers, all other
8520 Model makers and patternmakers, wood
8610 Stationary engineers and boiler operators
8640 Chemical processing machine setters, operators, and tenders
8730 Furnace, kiln, oven, drier, and kettle operators and tenders
8740 Inspectors, testers, sorters, samplers, and weighers
8750 Jewelers and precious stone and metal workers
8760 Medical, dental, and ophthalmic laboratory technicians
8800 Packaging and filling machine operators and tenders
8810 Painting workers
8830 Photographic process workers and processing machine operators
8840 Semiconductor processors
8850 Cementing and gluing machine operators and tenders
8860 Cleaning, washing, and metal pickling equipment operators and tenders
8910 Etchers and engravers
8930 Paper goods machine setters, operators, and tenders
9120 Bus drivers
9140 Taxi drivers and chauffeurs
9150 Motor vehicle operators, all other
9260 Subway, streetcar, and other rail transportation workers
9500 Crane and tower operators
9520 Dredge, excavating, and loading machine operators
9560 Hoist and winch operators
9600 Industrial truck and tractor operators
9610 Cleaners of vehicles and equipment
9640 Packers and packagers, hand
9650 Pumping station operators
9740 Tank car, truck, and ship loaders

Technical Notes:

The list of high-risk occupations will be updated every five years to reflect changes in occupations with high risk for morbidity over time. For example, the occupations at high risk for occupational morbidity according to the 2008 BLS Annual Survey differ somewhat from the high-risk occupations identified in the 2003 BLS Annual Survey. It is not anticipated that year-to-year changes will have significant effect on comparative or trend analyses, but these changes will be evaluated.

INDICATOR 16

'High-Risk' Industries & Occupations, 2003 – 2008

Thirty industries had fatality rates greater than 9.5 per 100,000 workers in 2003 – more than double the national rate which was 4.0 per 100,000 workers – according to the BLS CFOI. Fifty-seven occupations had fatality rates greater than 9.5 per 100,000 workers. In generating Indicator 16 for years 2003 – 2008, use the following Census codes to identify industries and occupations with high risk for mortality in the Current Population Survey data. The industry and occuaptions mix was updated in 2008 to 40 industries and 62 occupations, as reflected in the removed and added industries and occupations.

2000 Census Industry Code

170 Crop Production
180 Animal Production
270 Logging
280 Fishing, hunting, trapping
290 Support activities for agriculture and forestry
370 Oil and gas extraction
380 Coal mining
470 Nonmetallic mineral mining and quarrying
490 Support activities for mining
770 Construction
2570 Cement, concrete, lime, and gypsum product manufacturing
2590 Miscellaneous nonmetallic mineral product manufacturing
2770 Foundries
3770 Sawmills and wood preservation
3780 Veneer, plywood, and engineered wood product manufacturing
4280 Recyclable material merchant, wholesalers
4480 Farm product raw materials merchant, wholesalers
4490 Petroleum and petroleum product merchant, wholesalers
4680 Other motor vehicle dealers
5680 Fuel dealers
6090 Water transportation
6170 Truck transportation
6190 Taxi and limousine service
6280 Scenic and sightseeing transportation
6290 Services incidental to transportation
7190 Commercial, industrial, and other intangible assets rental and leasing
7770 Landscaping services
7790 Waste management and remediation services
8670 Recreational vehicle parks and camps, and rooming and boarding houses
8690 Drinking places, alcoholic beverages

Industries removed from the 2008 list

2590 Miscellaneous Nonmetallic Mineral Product Mfg.
4490 Petroleum and Petroleum Product Wholesalers
4680 Other Motor Vehicle Dealers
5680 Fuel Dealers
8670 Recreational Vehicle Parks and Camps, and Rooming and Boarding Houses

Industries added to the 2008 list

0190 Forestry, Except Logging
0390 Metal Ore Mining
1070 Animal Food, Grain, and Oilseed milling
1080 Sugar and Confectionery Products
2090 Miscellaneous Petroleum and Coal Products
2670 Iron and Steel Mills and Steel Product Mfg.
2690 Nonferrous Metal Production and Processing (Except Aluminum)
3680 Ship and Boat Building
4585 Wholesale Electronic Markets, Agents, and Brokers
6080 Rail Transportation
6270 Pipeline Transportation
6590 Sound Recording Industries
7180 Other Consumer Goods Rental

2000 Census Occupation Code

200 Farm, ranch, and other agricultural managers
210 Farmers and ranchers
1520 Petroleum engineers
3740 Fire fighters
3920 Security guards and gaming surveillance officers
3940 Crossing guards
4210 First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers
4250 Grounds maintenance workers
4340 Animal trainers
6000 First-line supervisors/managers of farming, fishing, and forestry workers
6050 Miscellaneous agricultural workers
6100 Fishers and related fishing workers
6130 Logging workers
6200 First-line supervisors/managers of construction trades and extraction workers
6210 Boilermakers
6250 Cement masons, concrete finishers, and terrazzo workers
6260 Construction laborers
6300 Paving, surfacing, and tamping equipment operators
6320 Operation engineers and other construction equipment operators
6350 Electricians
6460 Plasterers and stucco masons
6510 Roofers
6530 Structural iron and steel workers
6600 Helpers, construction trades
6720 Hazardous materials removal workers
6760 Miscellaneous construction and related workers
6800 Derrick, rotary drill, and service unit operators, oil, gas, and mining
6820 Earth drillers, except oil and gas
6830 Explosives workers, ordnance handling experts, and blasters
6840 Mining machine operators
6910 Roof bolters, mining
6920 Roustabouts, oil and gas

6930 Helpers, extraction workers
6940 Other extraction workers
7000 First-line supervisors/managers of mechanics, installers, and repairers
7220 Heavy vehicle and mobile equipment service technicians and mechanics
7260 Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers
7340 Maintenance and repair workers, general
7350 Maintenance workers, machinery
7410 Electronic power-line installers and repairers
7420 Telecommunications line installers and repairers
7520 Commercial drivers
7610 Helpers--installation, maintenance, and repair workers
8620 Water and liquid waste treatment plant and system operators
9030 Aircraft pilots and flight engineers
9130 Driver/sales workers and truck drivers
9140 Taxi drivers and chauffeurs
9150 Motor vehicle operators, all other
9230 Railroad brake, signal, and switch operators
9240 Railroad conductors and yardmasters
9300 Sailors and marine oilers
9310 Ship and boat captains and operators
9510 Crane and tower operators
9520 Dredge, excavating, and loading machine operators
9650 Pumping station operators
9720 Refuse and recyclable material collectors
9750 Material moving workers, all other

Occupations removed from the 2008 list

0200 Farm, Ranch, and Other Agricultural Mangers
1520 Petroleum Engineers
4340 Animal Trainers
6460 Plasterers and Stucco Masons
6720 Hazardous Materials Removal Workers
6930 Helpers, Extraction Workers
7260 Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers
7420 Telecommunications Line Installers and Repairers
7520 Commercial Drivers
7610 Helpers--Installation, Maintenance, and Repair Workers
8620 Water and Liquid Waste Treatment Plant and System Operators
9520 Dredge, Excavating, and Loading Machine Operators
9650 Pumping Station Operators

Occupations added to the 2008 list

2720 Athletes, Coaches, Umpires,and Related Workers
2800 Announcers
4240 Pest Control Workers
4540 Tour and Travel Guides
6220 Brickmasons, Blockmasons, and Stonemasons
6360 Glaziers
6400 Insulation Workers

6420 Painters, Construction and Maintenance
6730 Highway Maintenance Workers
7210 Bus and Truck Mechanics and Diesel Engine Specialists
7560 Riggers
8100 Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic
8140 Welding, Soldering, and Brazing Workers
9200 Locomotive Engineers and Operators
9330 Ship Engineers
9360 Service Station Attendants
9500 Conveyor Operators and Tenders
9600 Industrial Truck and Tractor Operators

Technical Note:

The list of high-risk industries and occupations will be updated every five years to reflect changes in industries and occupations with high risk for mortality over time. For example, the industries and occupations with high risk for occupational mortality according to the 2008 BLS CFOI Survey differ somewhat from the high-risk industries and occupations identified in the 2003 BLS CFOI Survey. It is not anticipated that year-to-year changes will have significant effect on comparative or trend analyses, but these changes will be evaluated.

No cost disclosure is required because the Occupational Health Indicators
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