

# OCCUPATIONAL-RELATED INJURIES

A 15-year old, male laborer died in Ohio as a result of injuries sustained while operating a six-wheeled utility vehicle at a private campground. On the morning of his death he was driving the small 18-horsepower vehicle between campsites, stopping at each campsite to clean debris from fire pits. He was crossing an access driveway when he collided with a trailer hitch on a fifth-wheel camper trailer. He was pronounced dead at the scene.

## Defining The Problem

Nationally, every five seconds a worker is injured in the United States. Every ten seconds, a worker is temporarily or permanently disabled. Each day, 17 workers die from injuries sustained on the job (Healthy People 2010). The cost in human resources, productivity, and medical/disability compensation was staggering in 1970 before implementation of Occupational Safety and Health Act (OSHA) and continues to be significant today. Work-related injury and death can occur in all workplaces, but statistics indicate certain jobs and demographics tend to have higher incidences of work-related morbidity and mortality.

## Goals

### Reduce deaths from work-related injuries.

HP 2010 Goal	3.2 per 100,000 workers
OH 2001	3.7*
US 1998	4.5

### Reduce work-related injuries resulting in medical treatment, lost time from work, or restricted work activity.

HP 2010 Goal	4.3 per 100,000
OH	identify baseline
US 1998	6.2

### Reduce rate of injury and illness cases involving days away from work due to overexertion or repetitive motion.

HP 2010 Goal	338 per 100,000 full-time workers
OH	identify baseline
US 1997	675

Data Sources - National: DOL, CFOI, BLS, OSHA, Healthy People 2010, CDC, NIOSH

State: Ohio BWC, CFOI, Bureau of Vital Statistics, ABLES

\*based on 2001 fatalities/2000 employed Ohio workforce estimates

## Data

### Deaths

Statewide occupational death data are compiled through the Census of Fatal Occupational Injuries (CFOI) program, a federally managed program jointly funded by Ohio Department of Health (ODH) and Department of Labor (DOL). The Ohio CFOI program has been in place since 1992.

In 2001, there were 209 work-related deaths recorded in Ohio. These recorded deaths were spread across many occupations, including the expected transportation and industrial, but also including service industries and agriculture. Vehicle-related fatalities have been the leading cause of work-related deaths, nationally and statewide, since 1980.

National trends from 1980 through 1998 reflect a downward slope in overall work-related fatalities. Rates were relatively stable from 1990 to 1995 at 4.3 deaths per 100,000 workers. Construction, transportation, public utilities, and manufacturing have the largest **number** of traumatic occupational-related deaths. Mining, agriculture, forestry/fishing, and construction have the highest traumatic occupational-related death **rates** per 100,000 (Healthy People 2010).

In 2001, Ohioans had fatal occupational injuries by event or exposure as follows:

Total fatalities (number)	Transportation	Assaults and violent acts	Contact with objects and equipment	Falls	Exposure to harmful substances	Fires and explosions
209	40	21	11	12	9	7

(CFOI data)

## Work-Related Homicide

In 1990, workplace homicides replaced machine-related injuries as the second leading cause of work-related fatalities. Nationally, there were 709 work-related homicides in 1998 (12% of total workplace fatalities) which represented an 18 percent decrease from 1997.

Sygnatur and Toscano (2000) looked at several variables of work-related homicides. Of the 428 identifiable homicides in 1998, more than two-thirds involved robbers.

**Occupations** with the highest rates involved working alone or in small numbers, in high-crime areas, or cash transaction activities. Taxicab drivers and chauffeurs had the highest work-related homicide rate.

**Industries** with the highest rates were retail trade and services such as food stores, and eating and drinking establishments.

From 1992 – 1998:

- Blacks, Asians and other minorities faced a disproportionately high risk of workplace-related homicide.
- Workers between the ages of 25 and 55 accounted for most work-related homicides.
- Youths under the age of 18 accounted for less than one percent of the total.

Homicide is the leading cause of work-related fatalities for women (NIOSH, 2000).

Approximately 1 in 3 female work-related homicides are associated with sales occupations. More than 25% of the female victims were assaulted by people they knew and about 16% resulted from domestic disputes that erupted in the workplace (BLS, 1998).

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## Injuries and Health Risks

Occupational injury data presently collected for the state of Ohio are inadequate and incomplete. National injury data from the Bureau of Labor Statistics (BLS) and U.S. Department of Labor (DOL) are available, but contain only sample Ohio data. Many states receive grants under BLS to collect specific state data, however Ohio does not participate in this program.

Injury data are collected for specific subgroups in the workforce, but there is no statewide database for all occupational-related injuries.

Data based on claims filed with the Bureau of Worker's Compensation are not all-encompassing and thus do not reflect the full extent of injuries/illness. They represent only incidents that result in restricted duty or days away from work and are financially compensable. In addition, these data generally do not include certain groups of workers such as agricultural workers and self-employed workers.

OSHA differentiates between incidents that require restricted job duties or job transfer from illnesses and injures that require days away from work. However, both restricted/transfer and days away from work are considered lost time. From 1992 to 1998, there has been a slow, but steady decrease in restricted/lost-time work injuries and illnesses nationally. Nevertheless in 1998, the last available data, the number of incidents reported nationally exceeded 3.5 per million. Based on BLS data, there were 1.7 million injuries and illnesses that required days away from work in 2000 and the median lost workdays for all cases was six days in 1999. Truck drivers have experienced the most injuries and illnesses resulting in time away from work since 1993 (BLS).

## Costs & Consequences

Sprains and strains are the most common injuries in Ohio and nationally. BLS indicates that repetitive or cumulative muscular skeletal disorders (MSD) comprise the greatest percentage of injuries and lost time; 577,800 of these injuries were associated with MSD. Sprains and strains accounted for 45% of women's work-related injuries and illnesses between 1992 and 1996 (BLS, 1998). Nationally, 4 out of 10 injuries and illnesses resulting in time away from work were sprains or strains, most often involving the back. MSD account for more than one third of all lost work time cases. Carpal tunnel syndrome (CTS) is the only MSD that has shown an increase since 1994. In 2000, CTS resulted in 27 median days away from work, whereas fractures accounted for 20 median days and amputations 18 median days (BLS).

An estimated 5.6 million health care workers, particularly nurses, and related occupations are at risk of occupational exposure to bloodborne pathogens, including human immunodeficiency virus, hepatitis B virus, and hepatitis C virus. Most of these work-related injuries occur during the disposal of contaminated sharps. An estimated 600,000 to 800,000 needlestick injuries occurred in 1999 (OSHA, 2002).

Lead exposure is a chronic health problem for workers, nationally and in Ohio. Occupational exposure accounts for 90 to 95 percent of exposed adults with elevated blood lead levels. Adult Blood Lead Epidemiology and Surveillance Program (ABLES) is a state-based surveillance program for identification and prevention of elevated adult blood lead levels. Ohio began reporting ABLES in 1996 (CDC).



### National:

In 1992, the combined economic impact on the nation from occupational illnesses and injuries was an estimated \$145 billion (NIOSH).

### State:

The financial impact of work-related injuries/illnesses is documented by 1996 through 1998 BWC activity: 788,000 claims were filed with the Ohio Bureau of Workers' compensation (BWC) that resulted in medical and indemnity claims of \$375 million dollars. Employees as young as 14 and as old as 90 were claimants. These claims do not include uninsured or self-insured work sites. A substantial uninsured work force in the state of Ohio is in agriculture. In addition, the economic impact does not include the cost to the economy from lost productivity due to employees' time away from work or the impact on the state's gross productivity.

In 1997, Ohioans filed 334,111 claims with the BWC related to occupational deaths, injuries, or illnesses. Ohio private sector establishments paid claims that totaled \$1.7 billion (NIOSH, 1998). This does not include public sector claims.

According to the data collected by BWC, millions of dollars are spent in treatment and time lost of sprains and strains.



## Risk Factors

### Age

- In 2000, NIOSH reported that workers ages 65 years and older had the highest rate of occupational injury death.
- Although the percentage of adolescents in the U.S. work force has decreased annually since 1994, millions of adolescents remain working. According to DOL, the number of workers under the age of 18 averaged over 2.6 million at any point in time in 1997. Data are not collected on employment of adolescents 16 years and younger by the DOL. On average, 70 adolescents die annually from work-related injuries (approximately 3% of all work-related fatalities) annually. The leading causes of death for these adolescents are traffic-related incidents, homicides, and machine-related deaths (Davis, Castillo, & Wegman, 2000). Traffic-related incidents were involved in 40% of these deaths. Youth jobs that require interaction with the public had high numbers of job-related fatalities that were usually related to assault and violence. The great majority (80%) of youth fatalities in the under 14 age group occurred in agriculture (Derstine, 1996). Youth worker outreach is a major concern both in Ohio and nationally. Having few or no skills and little knowledge of their rights and the laws designed to protect them, many youth begin some type of employment in their early teens. Employers often are unaware of federal or state child labor regulations which regulate the type of job, days, and hours that youths can be employed in non-agriculture settings.

### Workplace Size

- Workplace size is indirectly proportional to fatality rate. Workplaces with 1-10 workers had the highest fatality rate (8.6 deaths per 100,000 workers) whereas workplaces with more than 100 had the lowest rate (2 deaths per 100,000 workers).
- Adequate funding for programs is the major limitation. Many small employers cannot financially afford to train employees sufficiently and cannot afford to implement measures that minimize workplace violence. They often are unaware of BWC services and cannot afford to send employees to the courses because of replacement costs/availability for workers.

### Occupation

- An examination of risk for death by occupation reveals the following. Highway crashes and vehicle jackknifing were the leading work-related causes of death for truck drivers in 2000; tractor-related injuries were the leading cause of death for farmers; homicides were the leading cause of death for sales occupations; and falls were the leading cause of death for construction laborers (CFOI). The fatality rate for mining was more than five times the national average for all industries (NIOSH, 2000).

## Policy Issues

### National

The OSH Act of 1970 requires employers "...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources." The OSH Act established the National Institute for Occupational Safety and Health (NIOSH), a research agency. NIOSH conducts occupational health and safety research, provides education, and makes recommendations to OSHA and the nation's employers.

The Fair Labor Standards Act (FLSA) governs minimum wages, overtime, child labor, and recordkeeping. The Wage and Hour Division of the DOL Employment Standards Administration is charged with enforcing the FLSA.

The Needlestick Safety and Prevention Act became Public Law 106-430 on November 6, 2000 which requires changes to OSHA's Bloodborne Pathogens Standard. 29 CFR 1910.1030 mandates engineering controls, work practice controls, personal protective equipment, training, medical surveillance, hepatitis B vaccination, signs and labels in order to minimize disease transmission as a result of injuries from contaminated needles and sharps (OSHA, 2002).

### State

Ohio's Minor Labor Law, section 4109 of the ORC, parallels its federal counterpart in restricting hours, time, days and occupations that minors may work.

Section 4123.28 of the ORC requires every employer to keep a record of all injuries and occupational diseases, fatal or otherwise, received or contracted by his employees in the course of their employment and resulting in seven days or more of total disability.

Section 4167.07 of the ORC establishes employment risk reduction standards for the public sector. It is based on the federal OSHA standards.

## Existing Programs

### National:

OSHA operates four offices within Ohio. Unlike the majority of the states that surround Ohio, the federal government maintains jurisdiction over private sector and federal government employers. OSHA collects data through the OSHA Data Collection Initiative. The initiative provides OSHA with a list of employers to target their inspections; industries are selected for inspection based on a number of factors such as death, injury, or illness incidence rates, and employee exposure to toxic substances. This provides OSHA a greater opportunity to affect those employers with the worst safety and health records.

OSHA is the regulatory agency responsible for promulgating legally enforceable standards in compliance with the OSH Act. OSH Act Standards require employers to use appropriate engineering, administrative, and/or personal protective equipment to protect employees from work-related hazards. OSHA is authorized to enter and inspect the workplace without advance notice. After an inspection, OSHA may issue citations for violations and determine what penalties will be proposed based on the severity and repetition of the violation.

NIOSH conducts research but does not have authority to issue citations and penalties. NIOSH researches new workplace safety and health problems, provides technical assistance to OSHA, conducts on-site investigations to determine toxicity of materials, develops recommendations for OSHA's standards, and funds research and training by other agencies or private organizations.

In 1996, NIOSH unveiled the National Occupational Research Agenda (NORA) to guide occupational safety and health research over the next decade. NORA is a partnership between public and private organizations. One of the partnerships focuses on traumatic occupational injuries (NIOSH).

## State:

**The Bureau of Worker's Compensation, Division of Safety and Hygiene (DSH)** evaluates and makes recommendations for preventing industrial injuries and diseases. Since 1925, BWC has provided services to Ohioans for investigating and preventing industrial injuries and illnesses. It has been a key player in protecting the safety and health of Ohio workers and the assets of Ohio employers. As changes in workers, laws, and technology continually alter the work environment, BWC has evolved to meet the needs of its customers.

Any Ohio employer paying workers' compensation premiums may receive the following benefits at no cost:

- Onsite consultation from safety consultants, ergonomists or industrial hygienists,
- Training courses at the Ohio Center for Occupational Safety and Health or at one of six regional sites,
- Resource and video library: provides training videos, brochures, and resource locators specific areas of concern,
- Ohio Safety Council program: 54 councils providing local communities with occupational safety and health information,
- Safety grants that provide funding to eligible employers who want to prevent cumulative trauma disorders and sprain/strain injuries.
- Industrial hygienist for environmental monitoring and analytical methods to detect workplace hazards that have the potential to impact health.

In the late 1990's, DSH developed a business plan with the goal of having self-sustaining and long-lasting loss prevention for Ohio businesses. The plan focused on high injury/high premium industries and encouraged these customers to manage safety internally. DSH initially marketed this plan to nursing homes, machine shops, excavation industries, and public school systems. By working with these employers, DHS focused on services that would lead to the creation of a more safety conscious culture within the workforce and thereby, lower injury rates.

By the end of 2001, DSH had made a significant impact by saving \$81.6 million in claim costs. Because of the success of the initial business plan, DSH identified four new industries on which to focus in 2002: metal stamping, masonry, plastics and public employers. Thus far, these overall strategies have proven effective in reducing injuries and illnesses in Ohio.

**The Ohio Department of Commerce (ODC)** operates a consultation program, with grant funding from the Occupational Safety and Health Administration (OSHA), to assist small companies with high-hazard potential. The program provides assistance through consultations and training.

**The Public Employment Risk Reduction Program** (ORC 4167.07) regulates risk reduction for the public sector in Ohio. It requires public employers within Ohio to develop and maintain safe and healthful work environments for its employees. The program uses the federal OSHA standards as the minimum criteria for compliance. Statutory requirements for enforcement of these standards are somewhat different than OSHA's enforcement authority.

**The Adult Blood Lead Epidemiology and Surveillance (ABLES) Project**, which is funded through a contract with NIOSH and managed by ODH, involves the surveillance of blood lead levels in adults through laboratory and physician reporting of test results.

**Adolescent employment, both legal and illegal, has been on the increase in the U.S. during the last two decades.**

# Recommendations to Prevent Occupational Injuries

## Improve surveillance

1. Improve surveillance of occupational deaths and injuries by:
  - participating in the Department of Labor's Survey of Occupational Illnesses and Injuries.
  - adopting the U.S. Bureau of Labor Statistics injury data collection system.
2. Enhance surveillance of needlestick injuries to identify risk factors.

## Target resources toward high risk groups

3. Establish an occupational injuries work group to (a) identify and define priorities, (b) coordinate programs to reach priorities, and (c) strengthen surveillance systems for occupational illnesses and injuries.
4. Develop an occupational injuries coordinating committee, including representatives from the Bureau of Worker's Compensation, Department of Health, Department of Commerce, Department of Public Safety and OSHA to share data and avoid redundant programs.
5. Develop a multi-disciplinary task force, including representatives from the Department of Public Safety, Department of Transportation and the Department of Health, to investigate and report on work-related transportation fatalities. Provide for the dissemination of the findings and recommendations of the task force.
6. Develop and implement a work force violence prevention campaign, and evaluate its effectiveness. Target outreach efforts to those occupations and demographics at highest risk.

## Empower communities

7. Promote the existence of the Ohio Bureau of Worker's Compensation safety grants to encourage greater utilization of the grants and dissemination of the grant findings.
8. Implement a statewide outreach and education program to raise awareness among potential employers of the policies and regulations in existence to protect youthful workers from injury and illness.
9. Implement a grassroots youth worker outreach program to raise awareness among youth and their parents of the policies and regulations in existence to protect youthful workers. Promote resources designed to help youth develop strong safety habits as they enter the workforce.

## Expand training

10. Implement an awareness campaign to increase utilization of safe needle devices in all health care settings.



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**National target and baseline reduction from work-related deaths (20-1):**

Target reduction in deaths from work-related fatalities	1998 baseline per 100,000 workers	2010 target per 100,000 workers
All industry	4.5	3.2
Mining	23.6	16.5
Construction	14.6	10.2
Transportation	11.8	8.3
Agriculture, forestry, & fishing	24.1	16.9

(Healthy People 2010).

**National target and baseline data for medical treatment, lost time from work, or restricted work (20-2):**

Target for reduction medical treatment related work-related injuries	1998 baseline per 100,000 workers	2010 target pr 100,000 workers
All industry	6.2	4.3
Construction	8.7	6.1
Health services	7.9 (1997)	5.5
Agriculture, forestry, & fishing	7.6	5.3
Transportation	7.9 (1997)	5.5
Mining	4.7	3.3
Manufacturing	8.5	6.0
Adolescent workers	4.8 (1997)	3.4

(Healthy People 2010).

**National target and baseline data for rate of injury and illness cases involving days away from work due to overexertion or repetitive motion (20-3):**

Target for reduction in rate of injury and illness related to overexertion or repetitive motion.	1997 baseline per 100,000 workers	Target setting method
338 injuries per 100,000 full-time workers	675 injuries per 100,000 full-time workers due to overexertion or repetitive motion.	50% improvement.

(Healthy People 2010)