Profiles of Fatal Work Injuries

Largely as a result of reductions in job-related homicides and electrocutions, the number of fatal work injuries in the United States fell in 1996 to 6,112, the lowest level in five years, according to a report from the Bureau of Labor Statistics, U.S. Department of Labor.

In contrast to the national figures, fatal occupational injuries increased in Iowa, Illinois, and Nebraska. Iowa saw its total number of job-related fatalities rise from 54 in 1995 to 70 in 1996 – an increase of nearly 30 percent.

Nationwide, the Census of Fatal Occupational Injuries showed job-related electrocutions dropped 20 percent, and homicides fell 12 percent from 1995 to 1996. Meanwhile, fatalities from falls to lower levels continued to rise, reaching a five-year high. Half of the fatal falls occurred in the construction industry.

Labor Secretary Alexis Herman praised the overall improvement reflected in the latest report, but noted that on-the-job injuries killed 17 U.S. workers every day last year. She described the victims as “honest, hardworking Americans – people who get up and go to work and never come home to their families.”

Occupations with large numbers of fatal injuries included truck drivers, construction trades, farm occupations, and sales occupations. The construction industry accounted for one out of every six fatal work injuries that occurred during 1996.

Highway traffic incidents and homicides continued to lead all other events that resulted in fatal work injuries in 1996. These two events totaled over a third of the work injury deaths that occurred during the year.

Work-related highway deaths accounted for 22 percent of the 6,112 fatal work injuries in 1996. Slightly over half of the highway fatality victims were driving or riding in a truck.

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Decades of scientific research show “strong evidence” that musculoskeletal disorders are caused on the job, according to a report released in July by the National Institute for Occupational Safety and Health (NIOSH).

In a much anticipated scientific literature review, NIOSH reported that there is substantial and credible evidence linking cumulative trauma disorders and certain work-related factors. NIOSH concluded that epidemiologic research provides strong evidence of an association between disorders such as carpal tunnel syndrome and work-related physical factors when there are high levels of exposure and especially in combination with exposure to more than one physical factor (e.g., repetitive gripping and pinching in extreme or awkward postures).

NIOSH estimates that annual U.S. medical costs from repetitive stress injuries total $13 billion, and the U.S. Department of Labor has estimated overall costs at nearly $100 billion a year when such factors as lost work time, lost productivity, and retraining costs are added.

Republican congressional leaders, at the urging of a coalition of business groups, have barred OSHA from issuing an ergonomics standard for at least two years, arguing that there wasn’t enough scientific evidence about the causes of repetitive stress injuries. Rep. Henry Bonilla (R-Texas) has threatened to put a rider on the Labor Department appropriations bill for fiscal 1998 which would prevent OSHA from issuing an ergonomics standard until the National Academy of Sciences had reviewed the scientific literature on repetitive stress injuries.

Gregory Watchman, the acting assistant secretary of labor in charge of OSHA, has stated that “workers can no longer wait for further study.” He called the NIOSH report “compelling evidence” that demonstrates the link between working conditions and repetitive stress injuries. Under Watchman, OSHA is currently forming a standards team to develop an ergonomics regulation. Although a timetable has not been established, David J. Cochran of the University of Nebraska has been appointed to head the team assigned to develop a new regulation.

Despite the absence of a specific ergonomics standard, an employer with repetitive stress problems in the workplace can still be cited by OSHA under the what is know as the general duty clause. This is the clause in the federal occupational safety and health law that requires employers to provide a safe and healthful workplace.

A complete copy of the NIOSH report on ergonomics can be obtained on the agency’s website at http://www.cdc.gov/niosh/whatsnew.html


**Occupational Fatalities  Continued from page 1**

Off-road transport-related incidents (such as tractors or forklifts overturning) and workers being struck by vehicles each accounted for about 6 percent of worker fatalities. Air, rail, and water transport together accounted for another 8 percent.

Homicide, the second leading cause of job-related deaths, accounted for 15 percent of fatal work injuries in 1996. Robbery was the primary motive of job-related homicides. Almost half of the homicide victims worked in retail establishments, such as grocery stores and eating and drinking establishments, where cash is readily available. Disputes among coworkers and with customers and clients accounted for about one-seventh of the homicide total. Many of these homicides were committed after the worker was fired or the customer or tenant was asked to leave the premises. Arguments with customers and clients ranged from disagreements over monetary issues, such as rental or legal fees owed and quality of goods or services received, to disputes over refusal to serve alcohol. Domestic disputes accounted for one-sixth of the workplace homicides for female workers.

Falls continued to rise in 1996, accounting for 11 percent of the fatal work injuries. One-fifth were from or through roofs; falls from scaffolding and from ladders each accounted for about one-seventh. While still relatively small in number, falls from nonmoving vehicles rose by almost two-thirds over the previous year.

Nine percent of the fatally injured workers were struck by various objects, such as falling trees, machinery or vehicles that had slipped into gear, and various building materials. Fatalities resulting from being struck by falling objects were at their highest level since the fatality census began in 1992.


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**Where Will the Work Be in 2005?**

Iowa Workforce Development recently issued *Occupational Projections – 1996-2005*, a publication listing occupations that exist in the state of Iowa and projecting how many job openings will exist in future years. During the time period examined, I.W.D. predicts overall job growth of 173,570 (10%) in Iowa. Industries below are ranked by projected job growth or decline.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Projected Growth by 2005</th>
<th>Industry</th>
<th>Projected Decline by 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary and Secondary Schools</td>
<td>15,415</td>
<td>Hospitals</td>
<td>(5,390)</td>
</tr>
<tr>
<td>Self-employed and Unpaid Family Workers</td>
<td>12,820</td>
<td>Ag Production, Livestock (Beef, Hogs, Lamb)</td>
<td>(3,700)</td>
</tr>
<tr>
<td>Eating and Drinking Places</td>
<td>11,050</td>
<td>Ag Production, Cash Crop Farms</td>
<td>(2,550)</td>
</tr>
<tr>
<td>Colleges and Universities</td>
<td>9,685</td>
<td>Farm and Garden Machinery Mfr.</td>
<td>(2,465)</td>
</tr>
<tr>
<td>Miscellaneous Business Services</td>
<td>8,200</td>
<td>Commercial Banks</td>
<td>(2,365)</td>
</tr>
<tr>
<td>Personnel Supply Services</td>
<td>6,665</td>
<td>Misc, Fabricated Metal</td>
<td>(1,535)</td>
</tr>
<tr>
<td>Local Government, except</td>
<td></td>
<td>Products Manufacturing</td>
<td>(1,500)</td>
</tr>
<tr>
<td>Education and Hospitals</td>
<td>6,295</td>
<td>Telephone Communications</td>
<td>(1,500)</td>
</tr>
<tr>
<td>Grocery Stores</td>
<td>5,475</td>
<td>State Government, except</td>
<td>(1,260)</td>
</tr>
<tr>
<td>Computer and Data Processing</td>
<td>4,975</td>
<td>Education and Hospitals</td>
<td>(1,000)</td>
</tr>
<tr>
<td>Services</td>
<td></td>
<td>Ag Production, Dairy Farms</td>
<td>(975)</td>
</tr>
<tr>
<td>Residential Care</td>
<td>4,215</td>
<td>Fabricated Structural Metal Products Manufacturing</td>
<td>(975)</td>
</tr>
</tbody>
</table>

Source: Labor Market Information, I.W.D., May 1997
Trenching is one of the most hazardous operations in the construction industry. Proper sloping, shoring and shielding, as required by OSHA standards, can prevent most trenching accidents. Still, there are an estimated 75 to 200 deaths and more than 1,000 lost-work-days per year from trenching accidents.

Sometimes there is warning – small amounts of soil falling into the excavation, water seeping from the face of the trench or cracks that run parallel to the trench 1 or 2 feet out from the edge. At other times, the sides of the trench just come crashing in. Tons of soil hit the hapless victims in the blink of an eye – slamming their bodies into the opposite side of the trench, breaking bones, crushing rib cages, and burying the victims. Broken ribs can pierce the lungs and heart like knives.

On average, soil weighs 100 pounds per cubic foot, and the force of several cubic yards of soil hitting a victim can actually drive the body from 6 to 12 inches into the opposite wall of the trench, leaving a grizzly reminder. If the victim is lucky, he or she won’t be completely covered, allowing him or her to breathe. If not, suffocation can occur in a matter of minutes. Each time a buried victim exhales, the loose soil closes in on the chest making the next inhalation more difficult until the victim suffocates. Even partial engulfment can put so much pressure on the lungs that normal breathing becomes impossible.

Trenching Accidents: Iowa Case Reports

Des Moines: Two workers, using a backhoe and a steel safety box, were burying sewer pipes in a trench that was 10-feet deep. While prying up a slab of concrete, the backhoe scoop slipped. The sideways momentum of the scoop pinned one of the workers, a 26-year-old male, to the side of the trench box, causing massive internal injuries. He died 1 hour later. An investigation revealed that the backhoe did not malfunction, rather the victim was in a dangerous location, positioned between the scoop and the trench box.

Alburnette: Two men, aged 19 and 21 years respectively, were killed while working on a sewer line at an apartment building site. They used a backhoe to dig a 10-foot deep trench. While working in the trench, the walls caved in, completely burying the victims. One man was struck by a large piece of sharp concrete which crushed his skull; the other died from traumatic asphyxiation. It took more than an hour to remove the victims.

Panora: A 39-year-old man was installing an earth energy heating system at a lakefront home. While working in a 15-foot deep trench, one side wall collapsed and buried him. The trench was dug just 30 feet from the lake edge and the soil was wet, hard clay. The victim was rescued and partially revived by off-duty firemen, but died in the hospital the following day.

Case reports provided by the Iowa Fatality Assessment and Control Evaluation (FACE) program. For further information about FACE, call 1-800-513-0998.

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Hazaras associated with trenches include cave-ins, contact with energized power sources, hazardous atmospheres, loose rock and soil, water accumulation, and the collapse of adjacent structures.

Protective Measures

• For cave-ins: Use proper shoring, sloping, or shielding as a means of protecting employees exposed to the hazard of cave-ins. Other methods, such as use of cryogenic material to freeze the soil in place, can also be used and are allowed with the approval of a registered professional engineer.

• For contact with energized power sources or other utility installations (e.g., gas pipelines, telephone lines): Determine the estimated location of underground installations before digging begins and notify the owners of the underground installations. Ask that they establish the exact location of their installations.

• For loose rock or soil: Use retaining devices to prevent loose soil or rock from rolling into the excavation, or the employer must keep the spoil pile (the dirt excavated from the trench) at least 2 feet back from the edge of the excavation. Use prescribed protective measures against hazardous atmospheres, water accumulation, and the undermining and collapse of adjacent structures.

Occupational Health & Safety Events in the WORKSAFE IOWA Area

October 2-3. NIOSH-Approved Spirometry Training Course. Waterloo, IA. Allen Memorial Hospital Occupational Health Services, Midwest Power, Gerard Hall. This 16-hour course, as approved by NIOSH, is designed to train the individual in the proper performance of spirometry. This program has been approved for 1.9 CEUs for Nurses and 1.6 CEUs (CEUs) for Respiratory Care Practitioners. Fee is $400 per person (includes CEU processing). For additional information, contact Allen Memorial Hospital Occupational Health Service at (319) 235-3885.

October 21. Eastern Iowa Occupational Medicine Physicians Dinner Lecture. Iowa City, IA. Iowa Memorial Union, River Room 1, at 5:30 p.m. Tom Cook, PT, PhD, UI associate professor of preventive medicine and environmental health, will speak on, “The Role of the Health Care Provider in Participatory Ergonomics.” Fee is $15 for dinner. Reservations required by October 13. For additional information, contact Denise Watkins at (319) 335-4422.

October 30-31. 10th Annual Occupational Health Nursing Conference. Iowa City, IA. Holiday Inn. This conference will provide updates on practice, management and issues relevant to the specialty of occupational health nursing. Conference content will include health promotion and injury prevention in the workplace, emphasizing both wellness topics and clinical updates. Attendees will receive 0.7 CEUs each day; 1.4 CEUs for full-time attendance.
Half of all workers afflicted with carpal tunnel syndrome missed 30 days or more of work, according to the Bureau of Labor Statistics, U.S. Department of Labor. Work-related hernias, amputations (usually involving the finger), and fractures also commonly kept workers off the job for several weeks, as did about a fourth of sprains and strains involving workdays lost.

A total of 500,000 injuries and illnesses of all types lasted 21 days or more, accounting for a fourth of the 2 million cases in private industry in 1995 that resulted in worktime lost beyond the day of the incident.

The number of workdays missed after sustaining a certain type of injury or illness can vary widely. The table on this page shows, for example, that a fourth of the work-related carpal tunnel syndrome cases lasted 10 days or less, compared with a median absence from work of 30 days. The number of days away from work to recover from a particular type of injury largely reflects differences in injury severity, individual recuperation times, and the availability of light or restricted work activities (e.g., non-typing duties for persons recovering from carpal tunnel syndrome).

### Selected injuries or illnesses:

Number of work-related cases and days away from work, 1995

<table>
<thead>
<tr>
<th>Disabling condition</th>
<th>Total cases</th>
<th>Percent of total cases involving:</th>
<th>Median days away from work¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Under 3 days</td>
<td>1 to 10 days</td>
</tr>
<tr>
<td>Carpal tunnel syndrome</td>
<td>31,457</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>Hernia</td>
<td>30,482</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Amputation</td>
<td>11,308</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>Fracture</td>
<td>124,601</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>Sprain, strain</td>
<td>876,792</td>
<td>27</td>
<td>38</td>
</tr>
<tr>
<td>Cut, laceration</td>
<td>153,193</td>
<td>43</td>
<td>35</td>
</tr>
<tr>
<td>Chemical burn</td>
<td>13,861</td>
<td>52</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>2,040,929²</td>
<td>30</td>
<td>34</td>
</tr>
</tbody>
</table>

¹ Median workdays lost is the point at which half the injuries and illnesses involved more lost workdays and half involved fewer days.

² The total for cases involving days away from work includes data for disabling conditions in addition to the seven shown separately.

Note: Because of rounding, percentages may not add to 100.


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**Lost-Worktime Injury Data Reflect Varied Activities and Risks in U.S. Workplace**

Severe injuries

Of the four most disabling conditions shown in the following table – work-related carpal tunnel syndrome, hernias, amputations, and fractures – men were more likely than women to experience three of these. Women outnumbered men only in carpal tunnel syndrome, constituting seven-tenths of these lost-worktime cases. Interestingly, more women sustained carpal tunnel syndrome by operating machinery, on assembly lines, and tending retail stores than they did typing, keying, and performing other duties associated with office workers.

Nationally, women were about a third of the 2 million injuries and illnesses in 1995 with days away from work, a smaller proportion than their 45 percent share of the 95 million private wage and salary workers covered by the BLS survey.

Workers sustaining these four severe injuries performed a variety of work activities, such as handling clerical and sales duties, operating or repairing machinery, fabricating products on assembly lines, moving material by hand or truck, cleaning and maintaining buildings, and staffing construction sites. Workers in these...
kinds of occupations figured prominently in all lost-worktime injuries, and their risk of sustaining severe injuries appears to be especially high.

Assemblers’ share of total lost-worktime injuries and illnesses (2.7 percent), for example, was twice their portion of total private wage and salary employment (1.3 percent); their share of carpal tunnel syndrome cases, however, was 8 percent. Similarly, truckdrivers sustained 9 percent of all fractures and about 7.5 percent of all lost-worktime cases; they were about 2.5 percent of the 1995 employment total.

The manner in which workers sustained severe injuries differed, suggesting that remedies to prevent such injuries need to address a variety of circumstances. Virtually all cases of carpal tunnel syndrome resulted from stress or strain upon a worker’s wrist due to a task’s repetitive nature. Examples include grasping and unravelling bolts of cloth, scanning groceries, typing or key entry, and cutting meat or poultry on an assembly line. By contrast, about three-fifths of work-related amputations involved a worker’s finger being caught in or compressed by a piece of equipment, machinery, or an object, such as a conveyor, printing press, or wire reel. Seventh-eighths of the hernias resulted from overexertion, primarily while lifting heavy objects, for example, laborers moving household goods or butchers maneuvering carcasses of meat. And seven-tenths of fractures on the job were due to falls or workers being struck by objects, such as janitors falling off ladders or carpenters being hit by falling lumber. For all lost-worktime injuries and illnesses, overexertion was a fourth of the total of 2 million cases, the largest share among individual events or exposures.

Source: Occupational Safety and Health Administration
WORKSAFE IOWA Occupational Medicine Associates

Work Well Clinic
St. Luke's Hospital
Cedar Rapids, IA
(319) 369-8153

Occupational Health Services
Jennie Edmundson Hospital
Council Bluffs, IA
(712) 328-7654

Iowa Methodist
Occupational Health
Iowa Methodist Medical Center
West Des Moines, IA
(515) 241-2020

Tri-State Occupational Health
Medical Associates
Mercy Health Center
Dubuque, IA
(319) 582-2525

Trinity Corporate Health Services
Trinity Regional Hospital
Fort Dodge, IA
(515) 574-6354

Grandview Occupational
Health Services
St. Luke's Health System
South Sioux City, NE
(402) 494-2065

Trinity Corporate Health Services
Trinity Regional Hospital
Fort Dodge, IA
(515) 574-6354

Work Fitness Center
Trinity Medical Center and
Genesis Medical Center
Quad Cities
(309) 764-9675

Occupational Health Services
Allen Memorial Hospital
Waterloo, IA
(319) 235-3885

WORKSAFE IOWA is an occupational and environmental health program of The University of Iowa's Institute for Rural and Environmental Health.

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WORKSAFE IOWA
The University of Iowa
100 Oakdale Campus – 126 AMRF
Iowa City, IA 52242-5000
(319) 335-4433
(800) 891-5789

World Wide Web
http://info.pmeh.uiowa.edu/worksafe/page1.htm

Promoting Occupational Health and Safety through Consultation and Education