

# S A F E T Y

## Preventing High Insurance Premiums and On-the-Job Injuries

### What are poor health and safety habits costing you?

by R.J. Matetic and David K. Ingram

**R**esearchers associated with the National Institute for Occupational Safety and Health (NIOSH), Pittsburgh Research Laboratory (PRL), are investigating injuries (fatal and nonfatal) attributed to water well drillers during well drilling activities.

Injury data, obtained from various sources, suggest that many water well drillers are experiencing unnecessarily high insurance premiums and very avoidable citations or violations from the direct result of accidents, injuries, and fatalities occurring throughout the water well drilling industry. Expensive insurance premiums and unnecessary

citations are the direct result of poor health and safety practices. Visits to numerous water well drilling sites were conducted by NIOSH personnel to characterize and identify the injury data collected and to provide inexpensive strategies to prevent, minimize, and eliminate safety and health issues associated with water well drilling activities.

#### Accidents, Fatalities, and Injuries: Analyzing the Data

Data were collected from the Bureau of Labor Statistics (BLS), a commercial insurance provider, and the Occupational Safety and Health Administration (OSHA).

The BLS is a federal agency that keeps a collective database of all injuries and fatalities for each U.S. occupation. According to these data, approximately 50 percent of all fatalities involving water well drilling are attributed to electrocution, while the majority of nonfatal injuries are attributed to material-handling accidents (Table 1).

From 1993 to 1996, the BLS registered 29 water well drilling fatalities. Fifteen of these were due to electrocution. Eleven of the 15 fatalities were the result of the rig making contact with overhead power lines. Loss of life is more costly than money to any company. However, when a life is lost, workers compensation claims are submitted to the insurance companies. Workers compensation claims are the largest share of insurance claims filed by water well drillers (Figures 1 and 2).

OSHA will issue violations under the Federal Code of Regulations clause "Excavation" when fatalities occur. Excavation violations, which include criteria such as site inspection (overhead power lines), rank as the number one

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**Table 2**  
**OSHA Violations and Their Associated Costs\***

**Top Five Violations – Number Issued To Water Well Drillers:**

1. General Safety and Health Provisions (Training, Records, Personal Protective Equipment)
2. Excavations (Site Inspection)
3. Electrical (Designs, Methods)
4. Walking-Working Surfaces (Floor, Ladders, Stairs)
5. Occupational Health and Environmental Control (Emergency Plans)

**Top Five Violations<sup>1</sup> – Total and Average Costs<sup>2</sup>**

	<b>Total Cost</b>	<b>Average Cost</b>
1. Excavations (Site inspections)	\$27,650	\$1728
2. General Duty Clause (Any unsafe condition, catchall)	\$24,278	\$4857
3. General Safety and Health Provisions (Training, records, personal protective equipment)	\$14,880	\$595
4. Walking-Working Surface (Floors, ladders, stairs)	\$6220	\$478
5. Electrical (Designs, methods)	\$5292	\$278

<sup>1</sup>October 1994–September 1997

<sup>2</sup>Per violation.

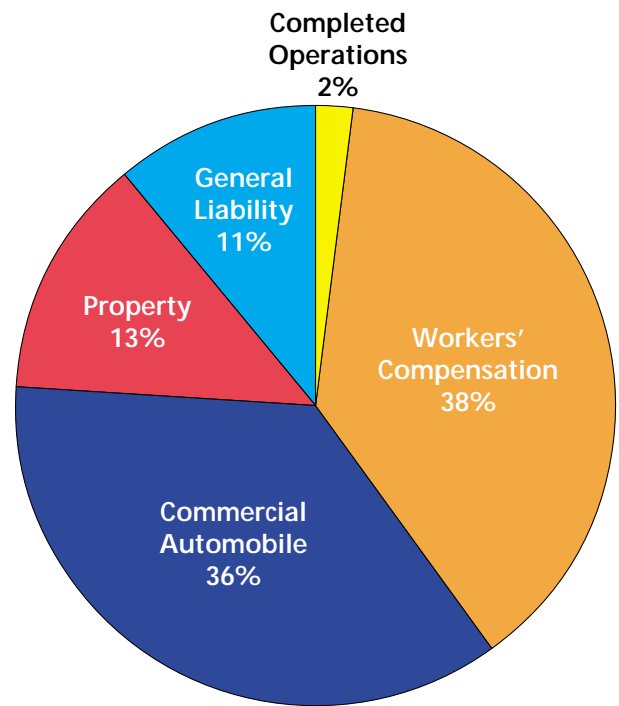
\*Source: OSHA Office of Management Data Systems, Washington, D.C.

**Table 1 on page 12.**

most costly violation and the number two most cited violation OSHA issues to well drillers (Table 2; Figure 3).

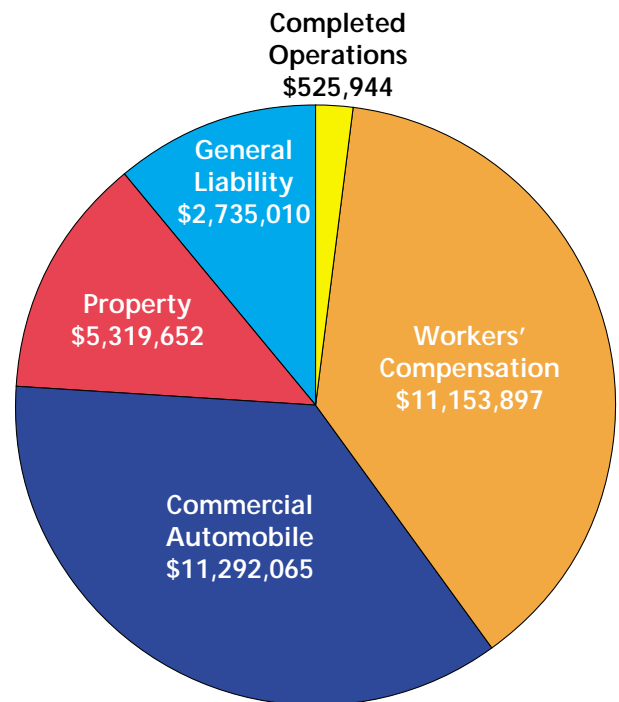
The 1992 to 1996 BLS data show the source of injury for the largest percentage of accidents for water well drillers is material handling (29 percent) (Table 1). Material handling injuries are the most common workers compensation insurance claims (38 percent) filed by water well drillers. OSHA citations issued under the “General Duty” clause of the code of Federal Regulations (Table 2; Figure 3) are usually directed to material-handling issues; therefore, it is not surprising that the most common injury (material handling) correlates to the second most costly OSHA violation issued water well drillers—the “General Duty” citation.

The aforementioned discussion illustrates two correlations of common insurance claims, and OSHA violations for fatal and nonfatal accidents occurring in the water well drilling industry. A thorough review of the BLS, insurance, and OSHA data further supports a direct relationship of the health and safety concerns the water well drilling industry should be addressing. They include safety training for all employees, use of personal protective equipment, good housekeeping at the site and shop, and overall awareness that health and safety is a problem for the water well drillers and it can be corrected.



\*Source: CNA Commercial Insurance, Chicago, Illinois

**Figure 1. Number of insurance claims by line of coverage.**



\*Source: CNA Commercial Insurance, Chicago, Illinois

**Figure 2. Total costs of insurance claims by line of coverage**

**Insurance Data: Tabulating the Claims**

According to the National Ground Water Association (NGWA), there are approximately 10,000 water well drilling contractors throughout the United States. The following information was compiled from the underwriter of the Drilling Contractors Insurance Program (DRILL) between December 15, 1993, and December 15, 1997.

**Table 1**  
**Summary of Bureau of Labor Statistics for Water Well Drillers 1992–1996\***  
 (Percentages based on all injuries and illnesses filed with BLS)

Worker Demographics		Sources and Nature of Injury or Illnesses		Parts of Body Affected		Events or Exposures Leading to Injury/Illness		Lost Workdays Cases (1994–1996)	
Length of Service	Age of Worker	Source	Nature					Injuries & Illnesses	Injuries Only
3-11 months	20-24 years	Parts and materials handling	Sprains and strains	Trunk	43% of the total (parts of body affected)	Contact with objects	36% of total (events or exposures leading to injury/illness)	With days away from work	46%
1-5 years	25-34 years	Floors, walkways, ground surfaces	Fractures	Back	73% of trunk-related injuries/illnesses	Struck by object	50% of contact with objects	Without lost work-days	50%
More than 5 years	35-44 years	Hand tools	Bruises	Shoulder	1% of trunk-related injuries/illnesses	Caught in object	20% of contact with objects		
		Machinery	Cuts/punctures	Upper extremities	24% of total (parts of body affected)	Struck against object	9% of contact with objects		
				Finger	36% of upper extremities injuries/illnesses	Overexertion	28% of total (events or exposures leading to injury/illness)		
				Hand	7% of upper extremities injuries/illnesses				
				Wrist	12% of upper extremities injuries/illnesses				
				Lower extremities	19% of total (parts of body affected)				
				Knee	10% of lower extremities injuries/illnesses				
				Foot, toe	14% of lower extremities injuries/illnesses				

\* Source: U.S. Department of Labor, Division of Information Services, Washington, D.C.; [www.dol.gov](http://www.dol.gov)

This loss data tabulates information from 4786 claims that incurred more than \$31 million in loss costs. The insurance data represents 7 percent of the water well drilling industry, or approximately 650 contractors. However, it is believed, through direct communication with other insurance companies, these figures are representative for the majority of the drilling industry. Furthermore, if these figures were extrapolated for all water well drilling contractors, the expenditures would be exponentially larger.

The five most common types of insurance coverages for well drillers are workers compensation, commercial automobile, property, general liability, and completed operations. The loss history percentage and costs involved are illustrated in Figures 1 and 2. The leading contributors of insurance losses are workers compensation and commercial automobile, with 74 percent of the total number of occurrences and 72 percent of the total costs, respectively.

A detailed review of the workers compensation claims identifies the most common source of injury water well drillers are experiencing. Workers compensation losses are identified in five categories: material handling, struck-all, falls-all, caught, and vehicle accidents. Of these categories, material handling and struck-all account for 55 percent of the occurrences and 55 percent of the total costs. Material handling is the most common claim (38 percent) filed by water well drillers (Figure 1). This costs drillers approximately \$7200 per incident. OSHA can cite material-handling accidents under the “General Duty” clause of the Code of Federal Regulations (Table 2; Figure 3). This citation is the second most costly violation issued by OSHA to water well drillers. It costs about \$5000 per violation.

## OSHA Data: Detailing the Violations

OSHA conducts inspections for several reasons. It may deem the field site or home office as dangerous if someone complains or anonymously notifies OSHA of unsafe conditions or practices. OSHA will always conduct an inspection, however, if there is a fatality or if three or more persons are injured in an accident.

The cost of any violation is determined by a complex matrix system. The seriousness of the violation determines the cost of the citation. However, the system has reduction factors that cut the violation costs by different percentages. These may include company size, past violation history, or the response given to a specific citation. For example, a small company could obtain up to a 60 percent reduction on a violation. A company with no prior violations could receive a 10 percent reduction, and a cooperative company could receive up to a 25 percent reduction for a citation.

Table 2 and Figure 3 illustrate the top five OSHA violations issued to water well drillers, and the top five most costly OSHA violations water well drillers paid for the period between October 1, 1994, and September 30, 1997. It is easy to recognize the top two violations issued, corresponding to the health and safety concerns documented in the BLS and insurance data. The General Safety and Health Provisions, Excavations, and General Duty Clause OSHA

violations match up with the most insurance claims filed (workers compensation), the BLS data fatalities (electrocution), and the source of injury (material handling). Further review of the OSHA data supports the correlation of the health and safety concerns water well drillers need to address.

## Changing Your Thinking

The following suggestions and recommendations are based on field visits to drill sites and personal communications with drill operators, to implement safety and health strategies in the drilling industry.

Make safety and health a higher priority through daily awareness, prevention, and control measures.

- Make sure your employees know the importance of safety and health issues to your company’s success and their livelihood.
- Develop formal safety and health plans. Contact your local state association, the National Ground Water Association, your insurance company, or local OSHA office for those specific to water well drilling.
- Think of ways to reward employees practicing proper safety procedures—through recognition, awards, or a drawing for a gift certificate.
- Stop, look at, and re-evaluate your operations and everyday procedures. You may tend to overlook small and large things because you see them all the time. But are they safe?
- Lead by example—follow all your rules to the letter.
- Share the responsibility by delegating. Assign a safety director. Give a monetary reward or perk to the safety director. Make it a rotating position. Send them to off-site training.
- Continue to provide safety communication and dialogue to all employees. One of the most important aspects of ensuring safety and health is practice. Mention it daily. Do it daily.

## Starting an Action Plan

Well drilling accident statistics remain high and NIOSH is in the process of developing suggestions to decrease accidents in the water well drilling industry. However, making well drillers aware of this information is valuable as a deterrent. NIOSH’s objective is to increase awareness that health and safety problems do exist and improvements on working conditions can be self-implemented. Programs and suggestions already exist from other organizations—and they are free. Find them, and modify them to your operations. For example, give logo jackets to all employees if your company has a safe year. Not only is it a professional gesture, but it advertises your business as well.

The bottom line is that business owners are responsible for their employees’ safety and health. Ultimately, you pay higher insurance premiums, and possibly lose an employee for some period of time. [WWW](#)