

# Workplace Injuries and Illnesses in the Extractive Industries

BY DAVID MCDERMOTT

Mining, quarrying, and oil and gas development—the extractive industries—are commonly thought of as dangerous places to work. While parts of the industry division may be hazardous, the overall nonfatal injury and illness rate (6.2 nonfatal injuries and illnesses for every 100 full-time workers) is lower than the average for all industries (8.1 cases per 100 full-time workers). (See table 1.) In fact, the incidence rate for mining is lower than for industrial sectors such as construction and manufacturing, and is comparable to that for services.

Injuries and illnesses in mining are more severe than in other industries and fatal mining injuries occur at relatively high rates. In 1995, 156 mining workers were killed. (See table 2.) The number of fatal accidents per 1,000 employees is the highest of all industry divisions, and over four times the national average. In addition, nonfatal injuries in mining tend to be more severe than those in the private sector overall. While only 31 percent of injuries and illnesses in the private sector are severe enough to result in days away from work, over 50 percent of the mining injuries and illnesses result in days away from work. The median number of days missed is 12 for injured or ill mining workers, over twice the average for all industries. More than a third of these injuries and illnesses are severe enough to result in more than 31 days away from work.

## Injuries and illnesses by industry

Within the mining division, the coal mining industries have the highest rate of nonfatal injuries, 9.1 per 100 full-time workers. (See table 3 and chart.) The anthracite coal industry, which is concentrated in Northeastern Pennsylvania, experienced 13.7 injuries or illnesses per 100 full-time workers, placing it among the 15 industries with the highest incidence rates. Oil and gas extraction experienced a

much lower incidence rate, 5.9 per 100 full-time workers, although the injury and illness rate varied dramatically by activity within the industry. The crude petroleum and natural gas industry, which includes research and administrative activities, experienced 2.4 injuries or illnesses per 100 full-time workers. The oil and gas field services industry, drilling and maintaining wells, had an injury and illness rate more than three times higher than the former.

Metals mining and quarrying experienced injury and illness rates of over 5 per 100 full-time workers. Both major groups are involved principally in digging material out of open pits, so the perils associated with underground mining are largely absent. The dimension stone industry, which involves quarrying large blocks of stone, had an injury and illness rate of 9.1. This is substantially higher than the rate in industries involved in quarrying sand, gravel, clay and other more tractable commodities.

## Injuries and illnesses by State

Rates of injury and illness in the mining industries vary by State. Among the 25 States reporting data for the mining division,<sup>1</sup> Alabama and Kentucky had the highest rates of injuries and illnesses. (See table 4.) Both States are heavily involved in coal mining, the most dangerous mining industry. In addition, they have substantial employment in underground coal mining, with the associated dangers of methane gas, roof collapse, and the perils of working with heavy machinery in a confined space.

Kansas and Utah also experienced relatively high injury and illness rates. Kansas had 8.7 cases per 100 full-time workers. Of the 8,000 workers in Kansas' mining industries, 6,700 were employed in oil and gas extraction, an industry that experienced 8.4 injuries and illnesses per 100 full-time workers. A large portion of the remaining workers in Kansas' mining industry was involved in the hazardous dimension stone industry. Utah experienced 8.1 cases per 100 full-time workers, with miners concentrated heavily

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in underground coal mines.

States reporting the lowest rates of injury and illnesses were those whose workers were concentrated in surface mining. Among States with at least 5,000 workers in min-

ing, Georgia and Florida, both with employees concentrating in surface mining of nonmetallic minerals, had the lowest rates of injury and illness. Georgia reported 3.1 cases per 100 full-time workers, and Florida reported 3.2.

—ENDNOTES—

<sup>1</sup> Not all States participate in the Revised Occupational Safety and Health program, and some States that do participate do not publish data for the mining division. In 1995, mining division data were published for Alabama, Alaska, California, Connecticut, Florida, Georgia, Indiana, Kansas, Kentucky,

Louisiana, Massachusetts, Michigan, Minnesota, Montana, Nevada, New Jersey, New Mexico, New York, Oklahoma, Rhode Island, Tennessee, Texas, Utah, Virginia, and Washington.

The Survey of Occupational Injuries and Illnesses is a Federal/State program in which employer reports are collected from about 250,000 private industry establishments. These reports are processed by State agencies cooperating with the Bureau of Labor Statistics. The survey measures nonfatal injuries and illnesses only. The survey excludes the self-employed, farms with fewer than 11 employees, private households, and employees in Federal, State and local government agencies.

The Census of Fatal Occupational Injuries uses diverse data sources to identify, verify, and profile fatal work injuries. Information about each workplace fatality is obtained by cross-referencing source documents such as death certificates, workers' compensation records, and reports to Federal and State agencies.

Table 1. Nonfatal occupational injury and illness rates per 100 full-time workers<sup>1</sup> by industry division, 1995

Industrial sector	Total cases <sup>2</sup>	Lost workday cases		Median days away from work
		Total <sup>2</sup>	With days away from work	
Private industry .....	8.1	3.6	2.5	5
Agriculture, forestry, and fishing .....	9.7	4.3	3.4	5
Mining <sup>4</sup> .....	6.2	3.9	3.3	12
Construction .....	10.6	4.9	4.2	7
Manufacturing .....	11.6	5.3	2.9	5
Transportation and public utilities .....	9.1	5.2	3.9	7
Wholesale trade .....	7.5	3.6	2.6	5
Retail trade .....	7.5	3.0	2.3	5
Finance, insurance and real estate .....	2.6	1.0	0.8	5
Services .....	6.4	2.8	2.0	5

<sup>1</sup> Incidence rates represent the number of injuries and illnesses per 100 full-time workers and were calculated as: (N/EH) X 200,000, where N=number of injuries and illnesses; EH=total hours worked by all employees during the calendar year; 200,000=base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

<sup>2</sup> Total includes cases involving restricted work activity only in addition to days-away-from-work cases with or without restricted work activity.

<sup>3</sup> Days away from work cases include those that result in days away from work with or without restricted work activity.

<sup>4</sup> Data conforming to OSHA definitions for mining operators in coal, metal and nonmetal mining are provided to BLS by the Mine Safety and Health Administration. Independent mining contractors are excluded from the coal, metal, and nonmetal mining industries.

**Table 2. Fatal occupational injuries and employment by industry, mining division, 1995**

Industry	SIC code <sup>1</sup>	Fatalities		Employment	
		Number	Percent	Number (in thousands)	Percent
Total .....		6,210	100	126,248	100
Private industry .....		5,438	88	106,522	84
Mining .....		156	3	625	1
Coal mining .....	12	43	1	114	( <sup>2</sup> )
Oil and gas extraction .....	13	77	1	336	( <sup>2</sup> )

<sup>1</sup> Standard Industrial Classification Manual, 1987 edition.

<sup>2</sup> Less than 0.05 percent.

**Table 3. Nonfatal occupational injury and illness rates per 100 full-time workers,<sup>1</sup> mining division, 1995**

Industry	SIC Code <sup>2</sup>	Total cases	Lost workday cases	
			Total <sup>3</sup>	With days away from work <sup>4</sup>
Private industry .....		8.1	3.6	2.5
Mining <sup>5</sup> .....		6.2	3.9	3.3
Metal mining .....	10	5.2	2.8	1.9
Iron ores .....	101	6.8	3.5	2.5
Copper ores .....	102	3.6	1.8	1.6
Lead and zinc ores .....	103	5.2	2.5	2.1
Gold and silver ores .....	104	5.5	3.2	1.7
Ferroalloy ores, except vanadium .....	106	5.9	3.3	1.9
Miscellaneous metal ores .....	109	6.7	4.5	3.1
Coal mining .....	12	9.1	6.7	6.3
Bituminous coal and lignite mining .....	122	9.0	6.7	6.3
Anthracite mining .....	123	13.7	10.4	9.5
Oil and gas extraction .....	13	5.9	3.4	2.8
Crude petroleum and natural gas .....	131	2.4	1.0	.8
Oil and gas field services .....	138	8.9	5.5	4.5
Nonmetallic minerals, except fuels .....	14	5.4	3.2	2.5
Dimension stone .....	141	9.1	5.6	5.2
Crushed and broken stone .....	142	5.8	3.4	2.5
Sand and gravel .....	144	4.9	3.1	2.7
Clay, ceramic and refractory minerals .....	145	4.6	2.9	2.2
Chemical and fertilizer minerals .....	147	3.6	2.2	1.5
Miscellaneous nonmetallic minerals .....	149	6.6	3.7	3.1

<sup>1</sup> Incidence rates represent the number of injuries and illnesses per 100 full-time workers and were calculated as: (N/EH) X 200,000, where N=number of injuries and illnesses; EH=total hours worked by all employees during the calendar year; 200,000=base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

<sup>2</sup> Standard Industrial Classification Manual, 1987 edition.

<sup>3</sup> Total includes cases involving restricted work activity only in addition to days-away-from-work cases with or without re-

stricted work activity.

<sup>4</sup> Days away from work cases include those that result in days away from work with or without restricted work activity.

<sup>5</sup> Data conforming to OSHA definitions for mining operators in coal, the Mine Safety and Health Administration provide metal and nonmetal mining to BLS. Independent mining contractors are excluded from the coal, metal, and nonmetal mining industries.

**Table 4. Nonfatal occupational injury and illness rates per 100 full-time workers,<sup>1</sup> mining division, 1995**

State and Industry	SIC Code <sup>2</sup>	Annual average employment (thousands)	Total cases	Lost workday cases	
				Total <sup>3</sup>	With days away from work <sup>4</sup>
<b>Alabama</b>					
Mining .....		10.9	11.4	8.9	8.6
<b>Alaska</b>					
Mining .....		9.8	4.4	1.7	1.4
Oil and gas .....	13	8.7	4.1	1.3	1.1
<b>California</b>					
Mining .....		29.2	5.3	3.1	2.0
Oil and gas extraction .....	13	21.5	4.9	2.7	1.4
<b>Connecticut</b>					
Mining .....		0.7	6.8	3.2	2.5
<b>Florida</b>					
Mining .....		6.9	3.2	1.7	1.1
Nonmetallic minerals, except fuels ..	14	6.3	3.4	1.8	1.2
<b>Georgia</b>					
Mining .....		7.7	3.1	1.8	1.1
<b>Indiana</b>					
Mining .....		6.4	5.9	3.6	2.9
<b>Kansas</b>					
Mining .....		8.0	8.7	4.5	4.1
Oil and gas extraction .....	13	6.7	8.4	4.5	4.2
<b>Kentucky</b>					
Mining .....		25.1	9.1	7.0	6.8
Coal mining .....	12	21.3	9.7	7.5	7.5
Nonmetallic minerals, except fuels ..	14	2.6	5.1	3.5	3.2
<b>Louisiana</b>					
Mining .....		46.3	4.3	3.1	2.7
Oil and gas extraction .....	13	44.1	4.3	3.1	2.8
<b>Massachusetts</b>					
Mining .....		1.3	3.1	1.4	1.2
<b>Michigan</b>					
Mining .....		8.4	6.9	3.6	3.0
<b>Minnesota</b>					
Mining .....		7.8	6.0	3.0	1.9
Metal mining .....	10	5.9	6.4	3.1	1.9
<b>Montana</b>					
Mining .....		5.3	5.9	3.7	2.9
Metal mining .....	10	2.1	6.8	4.6	3.0
Coal mining .....	12	1.0	3.4	2.2	1.5
Oil and gas extraction .....	13	1.4	-	4.0	4.0
Nonmetallic minerals, except fuels ..	14	0.7	6.9	2.9	2.3
<b>Nevada</b>					
Mining .....		13.2	5.2	3.1	1.5
Metal mining .....	10	11.8	5.0	2.9	1.2
Nonmetallic minerals, except fuels ..	14	1.3	7.0	4.3	3.5
<b>New Jersey</b>					
Mining .....		2.0	5.5	3.7	3.1
<b>New Mexico</b>					
Mining .....		16.0	6.3	3.1	2.4
Oil and gas extraction .....	13	10.1	7.8	3.5	2.5
Nonmetallic minerals, except fuels ..	14	2.0	4.7	3.2	2.6
<b>New York</b>					
Mining .....		4.8	5.0	3.2	2.8
<b>Oklahoma</b>					
Mining .....		32.1	5.1	2.9	2.7
Oil and gas extraction .....	13	30.0	5.1	2.8	2.7
<b>Rhode Island</b>					
Mining .....		0.2	2.6	2.6	2.6
<b>Tennessee</b>					
Mining .....		4.6	5.4	3.2	2.9

**Table 4. Nonfatal occupational injury and illness rates per 100 full-time workers,<sup>1</sup> mining division, 1995—Continued**

State and Industry	SIC Code <sup>2</sup>	Annual average employment (thousands)	Total cases	Lost workday cases	
				Total <sup>3</sup>	With days away from work <sup>4</sup>
<b>Texas</b>					
Mining .....		155.9	4.8	3.3	2.6
Oil and gas extraction .....	13	147.7	4.9	3.3	2.6
<b>Utah</b>					
Mining .....		8.1	8.1	4.4	3.6
<b>Virginia</b>					
Mining .....		11.4	7.7	5.9	5.3
Coal mining .....	12	7.8	9.1	7.3	6.7
Nonmetallic minerals, except fuels ..	14	3.2	5.1	3.2	2.8
<b>Washington</b>					
Mining .....		3.3	5.4	2.8	2.4

<sup>1</sup>Incidence rates represent the number of injuries and illnesses per 100 full-time workers and were calculated as: (N/EH) X 200,000, where N=number of injuries and illnesses; EH=total hours worked by all employees during the calendar year; 200,000=base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

<sup>2</sup> *Standard Industrial Classification Manual*, 1987 edition.

<sup>3</sup> Total includes cases involving restricted work activity only in addition to days-away-from-work cases with or without restricted work activity.

<sup>4</sup> Days away from work cases include those that result in days away from work with or without restricted work activity.

**Nonfatal occupational injury and illness rates, selected mining industries, 1995**

