

Burden associated with nonfatal slip and fall injuries in the surface stone, sand, and gravel mining industry

Supplemental Data A

Table A-1: Non-fatal injury incidence rates based on Mine Safety and Health Administrations accident/injury classification across various mining commodities

Accident/Injury Classification (All)	Non-fatal Injury Incidence Rate (per 10,000 FTE)									
	Coal		Metal		Nonmetal		Stone, sand, and gravel		Total	
	Mean	SD*	Mean	SD*	Mean	SD*	Mean	SD*	Mean	SD*
Handling materials	117.5	4.7	82.5	11.4	85.9	16.3	90.4	9.6	97.7	9.0
Slip or fall of person	68.5	5.0	50.8	8.9	52.8	11.4	52.9	7.4	57.8	7.3
Hand tools	40.4	4.9	26.6	4.6	26.1	5.5	37.5	5.5	35.6	5.2
Machinery	37.9	8.2	25.8	7.6	21.9	6.7	24.0	5.3	29.1	7.0
Powered Haulage	32.6	5.6	18.5	3.5	16.8	4.1	16.5	2.2	22.6	3.9
Fall of roof, back or brow	29.7	6.2	4.6	2.4	2.0	0.9	0.3	0.2	11.6	3.7
Other	4.5	1.0	8.0	1.1	7.3	2.5	8.3	1.6	6.8	1.1
Stepping or kneeling on object	6.9	1.1	4.9	1.2	3.9	1.4	4.6	1.0	5.4	0.9
Striking or bumping	6.1	1.3	2.5	0.8	2.0	1.0	2.5	0.9	3.7	0.9
Fall of face, rib, pillar, side or highwall	7.2	2.2	1.7	1.1	0.7	0.6	0.3	0.2	3.1	1.2
Electrical	2.3	0.4	1.2	0.8	1.7	1.0	1.2	0.6	1.6	0.3
Exploding vessels under pressure	1.4	0.6	1.2	0.9	1.1	0.6	0.9	0.3	1.1	0.3
Falling, Rolling or sliding rock or materials of any kind	1.2	0.5	0.8	0.6	0.6	0.6	0.9	0.4	1.0	0.4
Nonpowered Haulage	0.5	0.3	1.0	0.8	0.8	0.6	0.7	0.4	0.7	0.3
Fire	0.4	0.2	0.4	0.3	0.6	0.7	0.5	0.3	0.5	0.2
Ignition or explosion of gas or dust	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.3	0.1
Hoisting	0.1	0.1	0.3	0.2	0.5	0.4	0.1	0.1	0.2	0.1
Explosives and breaking agents	0.1	0.1	0.2	0.3	0.0	0.1	0.1	0.2	0.1	0.1
Entrapment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Inundation	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

*: Standard Deviation

Table A-2: Non-fatal injury incidence rates based on Mine Safety and Health Administrations accident type or event across various mining commodities

Accident Type or Event (ATYPE) (Recoded to 10 categories)	Non-fatal Injury Incidence Rate (per 10,000 FTE)									
	Coal		Metal		Nonmetal		Stone, sand, and gravel		Total	
	Mean	SD*	Mean	SD*	Mean	SD*	Mean	SD*	Mean	SD*
Struck by or against	171.0	22.9	91.9	16.7	77.6	13.9	92.2	11.4	118.6	18.9
Overexertion	85.8	4.7	59.9	8.6	66.6	12.9	65.4	8.1	71.4	7.0
Fall	44.8	4.5	33.1	7.4	36.4	8.9	37.0	6.6	38.9	6.3
Caught in, under, or between	44.7	4.8	27.5	6.4	28.8	6.9	30.3	3.1	34.8	4.9
Exposure to noxious substances	2.7	0.6	9.3	2.8	5.7	1.7	6.1	0.6	5.4	0.6
Contact with	3.5	0.8	4.0	1.6	4.7	1.8	5.2	1.4	4.3	0.9
Bodily reaction NEC~	2.3	1.0	3.3	1.0	2.6	1.3	2.7	0.9	2.6	0.7
Flash burns	1.5	0.4	0.9	0.6	1.5	0.9	1.5	0.5	1.4	0.3
Unclassified or NEC~	0.6	0.2	1.1	0.6	0.8	0.7	1.1	0.6	0.9	0.4
Rubbed or abraded NEC~	0.7	0.3	0.2	0.3	0.2	0.3	0.6	0.2	0.5	0.2

*: Standard Deviation

~: not elsewhere classified

Table A-3: Non-fatal slip, trip, and fall injury incidence rates by operating location across various mining commodities

Operating Location (Recoded to 5 categories)	Slip, trip, and fall Injury Incidence Rate (per 10,000 FTE)									
	Coal		Metal		Nonmetal		Stone, sand, and gravel~		Total	
	Mean	SD*	Mean	SD*	Mean	SD*	Mean	SD*	Mean	SD*
Underground mining¹	90.7	7.9	69.6	14.4	79.9	27.8	77.6	12.8	86.5	8.6
Pit²	49.0	8.8	51.5	13.3	59.0	11.3	59.3	7.5	55.1	7.2
Plant³	71.3	7.4	57.9	10.1	59.1	15.0	66.9	14.1	64.1	11.9
Office	9.5	5.9	7.7	3.9	4.0	2.2	7.2	1.8	7.0	1.6

*: Standard Deviation

~: Sand and gravel mines do not have underground, shops and yards, or plants. Incidence Rates for those locations only represent stone mines.

¹: Underground operations and surface shops, yards, and tipple at underground mines

²: Includes strip, open pit mines and dredge operations. Surface mining for coal also includes auger mining and reworking of mine dumps. Surface mining for metal and nonmetal also include brine pumping.

³: Mill, preparation plant or breaker operations and associated shops and yards and independent shops and yards not associated with a mine