Risk Rank	Category	Situation or Condition or Factor that could result in Injury or Illness OR What could keep you up at night?	L		C		Risk
			L	sd-L	C	sd-C	
1	Ground control	Rock bursts underground.	4.75	0.66	4.50	0.50	21.38
2	Mobile equipment	Large vehicle and pedestrian or small vehicle interaction is common and lethal	4.38	0.70	4.75	0.43	20.81
3	Ground control	Loose rock at the face continues to kill and injure workers UG	4.25	0.97	4.63	0.48	19.68
4	Ground Control	Existing underground mines in Ontario are becoming deeper and incurring higher extraction ratios. These situations can result in various forms of ground instability.	4.50	0.71	4.25	1.09	19.13
5	Ground control	High faces not scaled and secured to protect workers.	4.25	0.97	4.50	0.50	19.13
6	Mobile Equipment	The mobile equipment employed in many underground mines is getting bigger. Bigger equipment can often result in poorer operator visibility (i.e. more and larger blind spots). This can result in collisions with other vehicles or contact with pedestrians.	4.25	0.66	4.38	0.48	18.62
7	Occ. Disease	Exposure to hazardous substances(dusts, materials, metals), gases/ fumes, biological materials or forms, Physical Hazards (vibration, noise, heat/cold stress, light.)	4.63	0.70	4.00	0.71	18.52
8	Fatigue	Working Shiftwork resulting in disrupted sleeping patterns.	4.63	0.48	4.00	0.87	18.52
9	Ground control	Fall of ground while installing ground support.	4.38	0.86	4.13	0.60	18.09
10	Training	Supervisors in some mines in Ontario lack the proper experience and Training. Inexperienced and improperly trained supervisors pose a threat to themselves and their direct-report workers.	4.38	0.70	4.13	1.05	18.09
11	Ground control	High faces not supported for ground falls.	4.25	0.97	4.25	0.66	18.06
12	Ventilation	Little in the way of controls on diesel equipment operating in certain areas. No way for workers to know how much equipment is working in any given area. Diesel emissions now a recognized cause of cancer.	4.50	0.87	4.00	0.87	18.00
13	Training	Standards not being followed.	4.50	0.50	3.88	0.93	17.46
14	Lockout/ guarding	Failure to isolate energy as a result of inappropriate lockout/tagging	4.00	0.71	4.13	0.60	16.52
15	Lockout/ Guarding	Workers caught by or impacted by release of stored energy	3.75	0.66	4.38	0.70	16.43
16	Mine services	Working from a scoop-tramp bucket (ie. For fan installation and the provision of other services)	4.38	0.70	3.63	0.99	15.90
17	Water management	Run of muck due to water in an ore pass.	3.50	0.71	4.50	1.00	15.75
18	Ground control	Exposure to unsupported ground while working on a scissor lift.	3.88	0.93	4.00	0.87	15.52
19	Hoisting	Lack of proper signals when hoisting.	4.13	0.93	3.75	0.97	15.49
20	Hoisting	More underground mines in Ontario are using programmable logic controls (i.e. P.L.C.'s) to operate mine hoists. Such mines often rely on suppliers to commission hoists utilizing P.L.C.'s and do not have in-house subject matter	3.75	1.20	4.13	1.05	15.49

21	Emergency Preparedness	Serious U/G fire resulting in fatalities.	**3.63**	1.11	**4.25**	1.30	**15.43**
22	Management of Change/ New	Legislation not keeping up with technology (i.e. collision avoidance systems, ventilation on-demand, anti-vibration technology.	**4.25**	0.66	**3.63**	1.32	**15.43**
23	Emergency Preparedness	Lack of second means of egress or second egress can be kilometers away from work areas with only one way in and out.	**3.88**	0.93	**3.88**	0.93	**15.05**
24	Ground control	Lack of procedures related to ground support installation, or poorly trained workers.	**3.75**	1.09	**4.00**	0.71	**15.00**
25	Ground control	Rehab of damaged areas.	**4.00**	0.87	**3.75**	0.83	**15.00**
26	Training	Lack of communication of dangerous condition (i.e. not reported in logbook).	**4.13**	0.78	**3.63**	0.99	**14.99**
27	Falls	Mounting and dismounting from mobile equipment	**4.38**	0.70	**3.38**	0.99	**14.80**
28	Falls	Slipping hazards in parking lots during winter months.	**4.50**	1.00	**3.25**	0.66	**14.63**
29	Ground control	No legislated protection of workers at face. Face is not required to be bolted and screened like walls and back.	**3.75**	1.71	**3.88**	1.17	**14.55**
30	Ergonomics	Inadequate design for equipment	**4.00**	0.71	**3.63**	0.48	**14.52**
31	Ground control	Struck by loose while scaling.	**4.13**	0.78	**3.50**	1.00	**14.46**
32	Water management	Water and slimes accumulation in drifts making it possible for it to enter ore/waste passes.	**3.50**	1.22	**4.13**	1.05	**14.46**
33	Training	Lack of competent personnel.	**4.13**	0.60	**3.50**	1.32	**14.46**
34	Training	Training not complete before supervisory duties commence	**4.25**	0.97	**3.38**	0.70	**14.37**
35	Inquest	Coroner inquest recommendations are not binding	**4.38**	0.70	**3.25**	1.39	**14.24**
36	Ground control	Improper selection of ground support, poor engineering practices, (e.g. stiff support installed when yielding support required).	**3.63**	0.99	**3.88**	0.78	**14.08**
37	Explosives/ blasting	Lack of inspection by a supervisor when drilling and blasting are occurring.	**3.88**	0.60	**3.63**	0.86	**14.08**
38	Shaft work	Inapprorpiate hoisting and slinging of equipment in shaft.	**3.88**	0.78	**3.63**	0.99	**14.08**
39	Lighting	Inadequate lighting for identifying ground conditions and installing ground supportl	**3.88**	0.93	**3.63**	0.99	**14.08**
40	Lockout/ guarding	Lack of lockout practices in relation to conveyors, operation and maintenance.	**3.75**	0.66	**3.75**	0.43	**14.06**
41	Lockout/ Guarding	Caught in rotating or moving equipment	**3.50**	0.87	**4.00**	1.00	**14.00**
42	Occ. Disease	Lack of dust control, water, dust suppressants, improper maintenance of dust collectors.	**4.00**	0.71	**3.50**	0.71	**14.00**
43	JHSC	Lack of management response to outstanding issues identified by the JHSC.	**4.00**	0.71	**3.50**	1.32	**14.00**

44	Emergency Preparedness	Inadequate Emergency preparedness in remoter work sites such as surface Diamond Drills, exploration work and gravel pits can turn a lesser injury into a fatality from mere delayed response.	**3.38**	0.99	**4.13**	0.93	**13.96**
45	Ergonomics	Inappropriate Manual Material handling.	**4.13**	0.78	**3.38**	0.70	**13.96**
46	Lockout/ guarding	Plugged backfill lines – sudden rupture or hazards during removal of pipe blockages.	**3.75**	1.20	**3.63**	0.86	**13.61**
47	Occ. disease	Designated substances list is not expanding with science. Many substances have been proven to be harmful in recent years and are not tested for. Also hard for workers to get a control program in place once designated substances are	**3.75**	0.83	**3.63**	1.11	**13.61**
48	Shaft work	Lack of protection for workers working below.	**3.75**	0.83	**3.63**	0.99	**13.61**
49	IRS	Effectiveness of behaviour based safety programs	**3.63**	0.99	**3.75**	1.30	**13.61**
50	IRS	Lack of workers ability to stop work without fear of reprisal. (i.e. Workers cannot stop unsafe work).	**3.75**	0.97	**3.63**	1.11	**13.61**
51	Management of change/ New	Lack of common standard for safely introducting new technology	**3.75**	0.97	**3.63**	0.99	**13.61**
52	Lockout/ guarding	Lack of guarding for conveyors.	**3.50**	0.87	**3.88**	0.93	**13.58**
53	Explosives/ blasting	Blasting hung up drawpoints resulting in a run of muck.	**3.88**	0.78	**3.50**	0.71	**13.58**
54	Ground control	Lack of suitable scaling bars in all active headings, or poor scaling practices.	**4.00**	1.22	**3.38**	0.99	**13.52**
55	Mine design	Intersection of diamond drill holes, improper notification, improper plugging and labelling.	**4.00**	1.00	**3.38**	0.86	**13.52**
56	Electrical	Worker contact with electricity or arc flash	**3.38**	0.70	**4.00**	1.00	**13.52**
57	Electrical	Contact with overhead power lines.	**3.38**	0.48	**4.00**	1.00	**13.52**
58	Inquest	Coroner's inquest recommendations not being tracked or followed province wide.	**4.00**	1.00	**3.38**	1.49	**13.52**
59	IRS	The Internal Responsibility System (i.e. the I.R.S.) is declining in the Ontario Mining Sector. The success of a health and safety system in any workplace is highly contingent on an effective I.R.S.	**4.00**	0.87	**3.38**	0.99	**13.52**
60	Infrastructure	Infrastructure (i.e. processing plants, shafts, hoisting plants, head-frames, access ramps and ore passes) at some aging underground mines in Ontario has not been well maintained, or is still in use well beyond its designed life	**4.13**	0.60	**3.25**	1.09	**13.42**
61	MOL	Out of date regs	**4.13**	0.60	**3.25**	0.97	**13.42**
62	Ventilation	Heat and Humidity at lower mining depths	**4.25**	0.66	**3.13**	0.60	**13.30**
63	Falls	Falling from an open raise while installing a work staging.	**3.63**	0.86	**3.63**	1.32	**13.18**
64	Stockpiles	Lack of controls when working around stockpiles or surge piles (winter freeze up)	**3.63**	0.70	**3.63**	0.70	**13.18**
65	Ground control	Lack of comprehensive ground support various heading types and dimensions, including progressive standard if seismicity is anticipated.	**3.50**	1.00	**3.75**	0.83	**13.13**
66	Lockout/ guarding	Lack of lockout and tagging related to installation of mine services (i.e. air, water, ventilation, and backfill lines)	**3.50**	0.71	**3.75**	0.43	**13.13**

67	Lockout/ guarding	Lack of machine guarding (i.e. at all points of contact with moving parts have been identified and controlled)	**3.50**	0.71	**3.75**	0.66	**13.13**
68	Ventilation	Improper closure of unventilated manways, drifts and access ways that pose a danger to a worker.	**3.50**	0.71	**3.75**	0.83	**13.13**
69	Emergency Preparedness	Poor housekeeping leading to possible mine fires.	**3.75**	0.83	**3.50**	1.00	**13.13**
70	Explosives/ blasting	Having to contend with frozen blast.	**3.75**	0.97	**3.50**	1.12	**13.13**
71	Hoisting	Lack of proper hoist maintenance program.	**3.75**	0.66	**3.50**	0.87	**13.13**
72	Water management	Ineffective water management program.	**3.88**	0.93	**3.38**	0.99	**13.11**
73	Lockout/ guarding	Insufficient fail safe measures for Lockout /Guarding	**3.38**	0.70	**3.88**	0.33	**13.11**
74	Explosives/ blasting	Lack of controlled blasting techniques to minimize loose and improve effectiveness of ground support.	**3.88**	0.93	**3.38**	0.86	**13.11**
75	Falls	Lack of ladder safety program.	**3.88**	0.93	**3.38**	0.70	**13.11**
76	Shaft work	Poor condition of Shaft guides, conveyances, and ladders.	**3.88**	0.60	**3.38**	0.99	**13.11**
77	Management of Change/ New	Addition of new technology/equipment/processes in the absence of a health and safety review	**3.88**	0.60	**3.38**	0.86	**13.11**
78	MOL	Lack of MOL technical support (engineering and hygiene)	**3.88**	0.93	**3.38**	1.22	**13.11**
79	Training	Lack of procedures implemented communicated and enforced.	**4.00**	0.87	**3.25**	0.83	**13.00**
80	Mine services	Lack of identification of all services (i.e. air, water, electrical, and fuel).	**4.00**	0.87	**3.25**	0.83	**13.00**
81	Mine design	Lack of Break through warnings.	**3.63**	0.48	**3.50**	1.00	**12.71**
82	MOL	Ministry of Labour lacks strong presence in the workplace. Ministry inspectors understaffed and overworked.	**3.63**	1.22	**3.50**	1.32	**12.71**
83	Raise Development	Inadequate supervision for raise inspections	**3.63**	0.86	**3.50**	1.00	**12.71**
84	Stockpiles	Inadvertent movement of bulk materials as a result of withdrawal, collapse or shifting of material.	**3.63**	0.70	**3.50**	0.71	**12.71**
85	Mine Design	No secondary egress	**3.38**	1.11	**3.75**	1.20	**12.68**
86	Mine design	Poor backfill quality or improper practices when mining under or against backfill.	**3.75**	1.20	**3.38**	1.32	**12.68**
87	Occ. disease	Whole body vibration on modern equipment is resulting in long term illnesses with workers underground	**3.38**	1.32	**3.75**	0.97	**12.68**
88	Emergency Preparedness	No Critical injury protocol in place (transportation).	**3.38**	0.70	**3.75**	0.83	**12.68**
89	Emergency Preparedness	Insufficient number of refuge stations in expanding mines	**3.38**	0.70	**3.75**	0.97	**12.68**

90	Shaft work	Travelling in a sinking bucket.	**3.38**	0.99	**3.75**	1.09	**12.68**
91	IRS	Lack of identification of all workplace hazards based on the activities of the operation.	**3.75**	0.66	**3.38**	0.70	**12.68**
92	Mine services	Hanging heavy fans and being struck by the fan.	**3.75**	0.83	**3.38**	0.70	**12.68**
93	Raise Development	Ground instability in raises	**3.75**	0.66	**3.38**	0.99	**12.68**
94	Ground control	Lack of comprehensive mine design assessing the ground stability of the active and proposed workings of the mine.	**3.25**	1.20	**3.88**	0.78	**12.61**
95	Mobile equipment	Mobile Equipment contact with Personnel	**3.25**	0.66	**3.88**	0.78	**12.61**
96	Mine design	Accesses/Egress are too small for emergency personnel to remove an injured worker or if required wear breathing apparatus.	**3.25**	0.83	**3.88**	0.93	**12.61**
97	IRS	In a global economy, changes in ownership of mining companies operating in Ontario are becoming more frequent. In some cases, new owners of mining companies bring health and safety cultures that are significantly different from	**3.88**	0.93	**3.25**	1.20	**12.61**
98	Occ. Disease	The majority of the underground mines currently operating in Ontario are gold mines. Gold ores are typically hosted in geological environments characterized by high silica content. Excessive exposure to dust generated in such mining	**3.38**	1.22	**3.63**	0.86	**12.27**
99	Explosives/ blasting	Not ensuring site is clear/ guarded prior to blasting.	**3.38**	0.48	**3.63**	0.99	**12.27**
100	Falls	Lack of guarding at open holes.	**3.63**	0.99	**3.38**	1.11	**12.27**
101	MLRC	Dysfunctional (ineffective) MLRC	**3.63**	1.11	**3.38**	1.32	**12.27**
102	Raise Development	Lack of face support in raises developed by raise climbers	**3.63**	0.86	**3.38**	1.22	**12.27**
103	Stockpiles	Inappropriate management of stockpiles (i.e. natural angle of repose, sampling methods, height, inspection, berms)	**3.63**	0.70	**3.38**	0.70	**12.27**
104	Mine design	Poor selection of equipment for mining processes (i.e. insufficient clearances)	**3.50**	1.00	**3.50**	0.71	**12.25**
105	Water management	Insufficient pumping capacity	**3.50**	0.71	**3.50**	1.00	**12.25**
106	Explosives/ blasting	Improper face preparation resulting in detonation of remaining explosives (mishole).	**3.50**	0.87	**3.50**	1.22	**12.25**
107	Hoisting	Improper slinging of equipment in shaft improperly, rigging, load drops.	**3.50**	0.87	**3.50**	0.87	**12.25**
108	JHSC	Joint health and safety committees in the Ontario Mining Sector are in some cases not permitted to fulfill the responsibilities afforded to them under the Occupational Health and Safety Act. Effective joint health and safety	**3.50**	1.00	**3.50**	1.32	**12.25**
109	MOL	Lack of ability to deal with new technology	**3.50**	0.71	**3.50**	1.12	**12.25**
110	Explosives/ blasting	Drilling into a bootleg.	**3.75**	0.83	**3.25**	1.30	**12.19**
111	Falls	Falls from shaft conveyances	**3.25**	0.66	**3.75**	1.48	**12.19**
112	Shaft work	Lack of thorough shaft inspections.	**3.75**	0.83	**3.25**	0.83	**12.19**
113	Hoisting	Damaged hoist ropes.	**3.75**	0.66	**3.25**	0.83	**12.19**

114	Mine services	Failure to call before digging at sites where there is natural gas, propane, high-pressure air lines.	**3.75**	0.66	**3.25**	1.20	**12.19**
115	Mobile equipment	Driving a scoop into an open stope & falling into the stope.	**2.63**	0.99	**4.63**	0.99	**12.18**
116	Mobile equipment	Wheels and rims, multi-piece rim assembly hazards	**3.13**	1.17	**3.88**	0.78	**12.14**
117	Ground control	Poorly installed shotcrete.	**3.38**	1.11	**3.50**	1.22	**11.83**
118	Lockout/ guarding	Lack of design and procedures related to operation of jaw crushers dealing with tramp material.	**3.38**	0.99	**3.50**	1.00	**11.83**
119	Emergency Preparedness	Insufficient working alone program.	**3.38**	0.99	**3.50**	0.87	**11.83**
120	Hoisting	Inadvertent spilling of hoist rope outside of designated compartment	**3.50**	0.87	**3.38**	1.11	**11.83**
121	Training	Routine operating procedures are designed to protect the employer rather than be simple and effective to practice	**3.38**	0.70	**3.50**	0.87	**11.83**
122	Emergency Preparedness	Suitable number of fire extinguishers strategically located.	**3.63**	0.86	**3.25**	0.97	**11.80**
123	Hoisting	Incompetent hoist operators.	**3.25**	0.66	**3.63**	0.99	**11.80**
124	Training	Inappropriate application of MTCU Signing Authority.	**3.63**	0.86	**3.25**	1.09	**11.80**
125	Training	Poor monitoring or communication during backfill placement operations.	**3.63**	1.11	**3.25**	0.83	**11.80**
126	Ground control	Short bolting or other non-conformance to company's ground support standards.	**3.13**	1.05	**3.75**	0.97	**11.74**
127	Hoisting	Shaft Conveyances being pulled through upper limits	**3.13**	0.78	**3.75**	1.09	**11.74**
128	Explosives/ blasting	Fly-rock damage.	**4.25**	0.97	**2.75**	0.97	**11.69**
129	IRS	There exist variable and divergent opinions throughout the Ontario Mining Sector on what is meant by the I.R.S.	**3.88**	0.93	**3.00**	1.12	**11.64**
130	Reporting	Not all unusual occurrences occurring in the Ontario Mining Sector that are required to be reported to the Ministry of Labour under Regulation 854, are actually reported.	**3.88**	0.60	**3.00**	1.00	**11.64**
131	Mobile/ stationary equipment	Improper tugger hoist inspections.	**3.38**	0.99	**3.38**	0.99	**11.42**
132	Occ. Disease	Lack of medical surveillance program.	**3.38**	0.99	**3.38**	0.70	**11.42**
133	Ventilation	With increasing electricity costs in Ontario, at present, one of the biggest expenditures incurred by underground mines operating in the province is that of electric power. One of the biggest uses of electricity in underground mines	**3.38**	0.86	**3.38**	0.70	**11.42**
134	Mobile equipment	Lack of proper maintenance of brakes and fire suppression systems	**3.25**	0.83	**3.50**	0.71	**11.38**
135	Occ. Disease	Lack of adherence to the designated substance program.	**3.25**	1.09	**3.50**	0.87	**11.38**
136	Ventilation	Ineffective fire drills.	**3.50**	0.87	**3.25**	1.20	**11.38**

137	Emergency Preparedness	Welding without appropriate burning permits.	**3.50**	1.12	**3.25**	0.97	**11.38**
138	Explosives/ blasting	Improper Priming procedures (Snap, slap and shoot- reverse priming)	**3.50**	1.32	**3.25**	0.97	**11.38**
139	Lighting	Inadequate illumination from personal headlamps and insufficient luminance for equipment.	**3.50**	1.00	**3.25**	1.09	**11.38**
140	MOL	Inconsistency in enforcement.	**3.25**	1.39	**3.50**	1.32	**11.38**
141	Mobile equipment	Lack of traffic control systems.	**3.63**	1.22	**3.13**	0.60	**11.36**
142	Occ. Disease	Mucking dry causing dust issues	**3.63**	1.32	**3.13**	0.78	**11.36**
143	Electrical	Outdated electrical equipment.	**3.63**	0.99	**3.13**	0.93	**11.36**
144	Emergency Preparedness	Not Meeting all requirements for regulation 854 section 281.1 and Reg 1101 (First Aid).	**3.13**	0.60	**3.63**	1.22	**11.36**
145	Explosives/ blasting	Radios and communication systems used around explosives.	**3.63**	1.32	**3.13**	1.17	**11.36**
146	Shaft work	Mucking shaft bottom.	**3.63**	1.22	**3.13**	1.05	**11.36**
147	MOL	Lack of managerial competency and support	**3.63**	0.48	**3.13**	0.93	**11.36**
148	Occ. Disease	Ministry of Labour Mining Health and Safety Inspectors do not have access to the same level of technical (i.e. engineering and hygienist) support that they had in the past. In many cases, they do not have sufficient technical	**3.75**	1.30	**3.00**	1.22	**11.25**
149	MOL	Out of date guidelines	**3.75**	0.66	**3.00**	1.22	**11.25**
150	Mobile equipment	Poor road conditions.	**3.88**	1.05	**2.88**	0.78	**11.17**
151	Infrastructure	Lack of inspection and verification of all ore and waste passes.	**3.88**	0.60	**2.88**	1.17	**11.17**
152	Ground control	Improper positioning of scissor lifts when bolting.	**3.38**	1.32	**3.25**	1.09	**10.99**
153	Mine design	Failure of fill fences due to inadequate design or installation.	**3.38**	1.32	**3.25**	1.09	**10.99**
154	Mine design	Lack of required De-stressing techniques	**3.25**	0.83	**3.38**	0.70	**10.99**
155	Explosives/ blasting	Lack of procedures for remote drilling.	**3.38**	1.11	**3.25**	0.97	**10.99**
156	Falls	Working on grizzlies.	**3.25**	1.20	**3.38**	0.99	**10.99**
157	Shaft work	Poor condition of shaft loading pockets and controls.	**3.38**	0.70	**3.25**	1.09	**10.99**
158	Stockpiles	Insufficient High Stockpile safety	**3.25**	0.66	**3.38**	0.70	**10.99**
159	Mobile equipment	Lack of FOPs fall on protection and maintenance of. No established remote control program	**3.13**	0.78	**3.50**	1.00	**10.96**

160	Mobile equipment	Lack of maintenance program for lifting equipment (cranes, scissor-lift equipment)	**3.13**	0.93	**3.50**	0.71	**10.96**
161	Electrical	Location of electrical cable/trolley being struck by machinery.	**3.50**	0.71	**3.13**	0.78	**10.96**
162	Emergency Preparedness	Non-Comprehensive Emergency Preparedness Program.	**3.13**	0.78	**3.50**	1.12	**10.96**
163	Reporting	Discontinued compilation and distribution of unusual occurance information by MOL	**3.50**	1.32	**3.13**	1.05	**10.96**
164	Mobile equipment	Excessive speeds when using mobile equipment.	**3.63**	0.99	**3.00**	0.71	**10.89**
165	MOL	No preoperational review by MOL to ensure program elements for hazards identified and H&S policy and program in place.	**3.63**	0.99	**3.00**	1.12	**10.89**
166	MOL	Blitz approach not effective	**3.63**	0.70	**3.00**	1.00	**10.89**
167	Mine Design	Reliance on non-current standards	**3.13**	0.78	**3.38**	0.86	**10.58**
168	Mine design	Lack of engineering standards and lack of information on prints.	**3.13**	0.60	**3.38**	0.70	**10.58**
169	Explosives/ blasting	Lack of post blast clearance procedures.	**3.38**	0.70	**3.13**	0.93	**10.58**
170	Training	Driving a scoop into a drawpoint, beyond the brow, into a longhole stope.	**3.38**	0.99	**3.13**	1.27	**10.58**
171	Training	Lack of program established for the identified program elements, Training requirements to address hazards.	**3.38**	0.99	**3.13**	0.78	**10.58**
172	Training	No standardized approach for the delivery of common core training.	**3.38**	1.11	**3.13**	0.93	**10.58**
173	JHSC	JHSC's lack the subject matter expertise to identify, assess, and control workplace hazards	**3.38**	0.48	**3.13**	1.05	**10.58**
174	Ground control	Inability to interprete and effectively utilize microseismic monitoring data	**3.25**	0.97	**3.25**	0.83	**10.56**
175	Mobile equipment	Track haulage, man machine interaction, clearances.	**3.25**	1.30	**3.25**	1.20	**10.56**
176	Ventilation	Lack of ventilation i.e. over reliance on natural ventilation	**3.25**	1.09	**3.25**	0.66	**10.56**
177	Emergency Preparedness	The Ontario Mine Rescue System is made up of volunteers. The success of a system relying exclusively on volunteers is highly contingent on the availability of willing and trained candidates and is therefore potentially vulnerable to interruptions. Reliable mine rescue services are essential for dealing with fires and other emergencies in underground mines	**3.00**	0.87	**3.50**	1.22	**10.50**
178	Explosives/ blasting	Inappropriate disposal of old explosives.	**3.50**	1.12	**3.00**	1.00	**10.50**
179	Explosives/ blasting	Lack of maintenance program for all equipment used with explosives.	**3.50**	0.50	**3.00**	1.00	**10.50**
180	Training	No Training program for some mining processes (i.e. crane operations)	**3.50**	0.87	**3.00**	0.87	**10.50**
181	Mobile equipment	Re-railing of cars and motors, use of rerailers, jacks.	**3.63**	1.49	**2.88**	0.93	**10.45**

182	Lockout/ guarding	Lack of lockout zero energy controls for electrical work.	**2.88**	0.93	**3.63**	0.70	**10.45**
183	Lockout/ guarding	Changing drill bits while drill steel is still moving.	**2.88**	1.05	**3.63**	0.86	**10.45**
184	Occ. Disease	Areas not identified for adequate hearing protection.	**3.63**	0.99	**2.88**	0.60	**10.45**
185	Ventilation	Lack of controls for encounters with explosive gases, methane.	**2.88**	0.93	**3.63**	1.11	**10.45**
186	Emergency Preparedness	Not having First aid and rescue equipment adequate and available at the site.	**2.88**	0.93	**3.63**	0.99	**10.45**
187	Ground control	Caving of ground, sink holes.	**3.25**	1.39	**3.13**	1.54	**10.17**
188	Mobile equipment	Lack of controls for remote operations	**3.25**	0.66	**3.13**	0.78	**10.17**
189	Mine Design	Historical mining areas not captured in current mining plans	**3.25**	0.83	**3.13**	1.17	**10.17**
190	Mine design	Inadequate design or construction of bulkheads for backfill.	**3.25**	1.20	**3.13**	0.93	**10.17**
191	Mine design	Lack of safe access around conveyors.	**3.13**	0.93	**3.25**	0.66	**10.17**
192	Water management	Diamond drill holes intersecting ore/waste passes	**3.13**	1.17	**3.25**	1.09	**10.17**
193	Explosives/ blasting	Inappropriate transportation and handling of explosives.	**3.25**	0.97	**3.13**	1.05	**10.17**
194	Ground control	Improper use of jacklegs to install back support. Not torqued properly.	**3.00**	1.32	**3.38**	1.11	**10.14**
195	Mine design	Lack of establishment and maintenance of escapeways	**3.00**	1.00	**3.38**	0.86	**10.14**
196	Water management	Poor procedures for placing hydraulic backfill leading to failure of bulkead or fill fence.	**3.00**	1.12	**3.38**	0.70	**10.14**
197	Occ. Disease	Lack of proper protection against welding fumes	**3.38**	0.99	**3.00**	0.87	**10.14**
198	Training	Workers riding in bucket or on conveyor belts.	**3.38**	0.86	**3.00**	1.00	**10.14**
199	Research	There is not enough legitimate research being done into mining health and safety in Ontario.	**3.38**	1.22	**3.00**	1.12	**10.14**
200	MOL	Inadequate inspector training	**3.50**	1.00	**2.88**	1.05	**10.08**
201	Mine Design	Continuous ladders in raises that are approaching 70 degrees	**3.63**	1.32	**2.75**	1.09	**9.98**
202	Water management	Lack of control over effluent discharge from workings.	**3.13**	1.17	**3.13**	1.17	**9.80**
203	Explosives/ blasting	Mucking into a benched area that has been reblasted.	**3.13**	1.05	**3.13**	0.93	**9.80**
204	Ground control	Corroded ground support due to corrosive mine water.	**3.00**	1.00	**3.25**	0.43	**9.75**

205	Ground control	Lack of reporting of rockbursts and fall of ground and the measures taken.	**3.00**	0.87	**3.25**	0.83	**9.75**
206	Mine design	Inadequate backfill design.	**3.25**	1.20	**3.00**	0.87	**9.75**
207	Lockout/ guarding	Inappropriate lockout mesures for chutes.	**3.00**	0.87	**3.25**	0.83	**9.75**
208	Ventilation	Worker exposure to noxious atmosphere	**3.25**	0.66	**3.00**	0.71	**9.75**
209	Mine services	Flammability of plastics mine piping and the resulting toxic materials that are admitted	**3.25**	1.20	**3.00**	1.12	**9.75**
210	Emergency Preparedness	Lack of self-rescuers.	**2.75**	0.97	**3.50**	1.00	**9.63**
211	Ground control	Lack of quality control program for the installation of ground support – procurement, pull testing, etc.	**2.63**	0.86	**3.63**	0.70	**9.55**
212	Mine design	Protection of public from mine openings.	**2.63**	0.99	**3.63**	0.86	**9.55**
213	Hoisting	Use of second-hand hoists	**3.63**	0.70	**2.63**	1.32	**9.55**
214	Water management	Insufficient planning for spring run-off	**3.00**	0.87	**3.13**	0.78	**9.39**
215	Training	Lack of ability to read, write and communicate in English.	**2.88**	1.17	**3.25**	0.97	**9.36**
216	Training	Lack of chute bars available for barring.	**3.25**	0.97	**2.88**	0.93	**9.36**
217	Explosives/ blasting	Storage of explosives and detonators that are past expiry date.	**3.63**	0.70	**2.50**	1.12	**9.08**
218	Inquest	Lack of mining sector expertise of the coroner and jury members	**3.63**	0.99	**2.50**	1.22	**9.08**
219	Ground control	Accumulation of loose material on berms and benches, ramps on surface, underground operations with open pits.	**2.88**	0.78	**3.13**	0.93	**9.01**
220	Ground control	Aging ground support leading to falls of ground, etc.	**2.88**	0.78	**3.13**	0.93	**9.01**
221	Ground control	Lack of mechanized scalers for high backs.	**2.88**	0.93	**3.13**	1.05	**9.01**
222	Occ. Disease	Lack of eyewash stations appropriate for the required duration of eye washing according to the Safety Data Sheet.	**3.13**	1.17	**2.88**	0.93	**9.01**
223	Occ. Disease	Presence of isocyanates when spray on liners or other resin products are used.	**3.13**	1.17	**2.88**	0.78	**9.01**
224	Explosives/ blasting	Blasting with ANFO in the absence of accepted detonation methods.	**2.88**	0.93	**3.13**	0.93	**9.01**
225	Training	Required Personal Protective Equipment not available.	**3.13**	1.36	**2.88**	0.93	**9.01**
226	JHSC	JHSC's are not permitted to conduct regular safety inspections.	**2.88**	0.93	**3.13**	1.17	**9.01**
227	Mobile equipment	No pre operation check list for equipment.	**3.00**	0.87	**3.00**	0.50	**9.00**

228	Ground control	Lack of seismic system for monitoring seismic activity and location.	**2.75**	1.09	**3.25**	1.09	**8.94**
229	Mobile equipment	No or insufficient program for monitoring, handling and installing large off road tires.	**2.75**	0.66	**3.25**	0.83	**8.94**
230	Shaft work	Ground instability of shaft.	**3.25**	0.83	**2.75**	0.66	**8.94**
231	Mobile equipment	Working from the bucket of a scoop while hanging messenger cable and being caught between the cable & the bucket.	**2.88**	1.05	**3.00**	0.71	**8.64**
232	Mobile equipment	Lack of pre-commissioning process, for all stationary and mobile equipment.	**2.88**	0.60	**3.00**	0.71	**8.64**
233	Mobile equipment	Lack of maintenance for track equipment	**3.00**	1.00	**2.88**	0.78	**8.64**
234	Raise Development	Lack of Raise climbers' inspections.	**3.00**	0.87	**2.88**	1.05	**8.64**
235	Mine design	Lack of safe access related to walkways, stairways, ladderways, and travelways.	**3.13**	1.27	**2.75**	0.97	**8.61**
236	Lockout/ guarding	Lack of emergency stops for conveyors.	**2.75**	0.83	**3.13**	0.78	**8.61**
237	IRS	No formal health and safety management system in place.	**2.75**	1.20	**3.13**	1.05	**8.61**
238	Shaft work	Lack of provision for safe location of skip tenders	**2.50**	1.22	**3.38**	0.99	**8.45**
239	Mobile equipment	Fuel transfers underground and on surface resulting in spillage	**3.50**	1.12	**2.38**	0.86	**8.33**
240	Occ. Disease	No protocol for respirators and fit testing.	**2.88**	1.05	**2.88**	1.05	**8.29**
241	Ventilation	Asphyxiation in backfilled areas.	**2.63**	0.86	**3.13**	1.36	**8.23**
242	Explosives/ blasting	Lack of proper tag in tag out central blasting issues.	**3.13**	0.93	**2.63**	0.86	**8.23**
243	Raise Development	Disposal of raise bore cuttings	**3.13**	1.17	**2.63**	1.11	**8.23**
244	Mine design	Improper design or procedures for dumping in ore pass waste pass, by train or mobile equipment.	**2.75**	0.97	**2.88**	0.78	**7.92**
245	Water management	Ineffective underground dams to hold settling water.	**2.75**	0.97	**2.88**	0.78	**7.92**
246	Lockout/ guarding	Lack of proper guarding for grinders.	**2.88**	0.93	**2.75**	0.66	**7.92**
247	Mobile equipment	No operator status cards for locking out mobile equipment.	**2.63**	0.99	**3.00**	0.71	**7.89**
248	Mine design	Poor location of electrical sub stations.	**3.00**	1.22	**2.63**	0.70	**7.89**
249	Electrical	Use of new power feeders in the absence of armour	**2.63**	1.11	**3.00**	1.00	**7.89**
250	Emergency Preparedness	No mutual aid agreement in place.	**2.63**	0.86	**3.00**	0.87	**7.89**

251	Explosives/ blasting	Lack of protection against lightning strikes and stray currents resulting in inadvertent detonation of explosives.	**2.25**	0.83	**3.38**	1.41	**7.61**
252	Mine design	Operation of rock breakers near pedestrians.	**2.63**	1.11	**2.88**	0.78	**7.57**
253	Occ. Disease	Mental, Social, Physical, Substance, and Community health	**2.75**	1.39	**2.75**	0.83	**7.56**
254	Occ. Disease	Encountering asbestos in a non-asbestos mine.	**2.50**	1.00	**3.00**	1.12	**7.50**
255	Mobile equipment	Track haulage, movement of material from shaft to workplace. Use of flat cars not designed for heavy loads.	**2.63**	1.11	**2.50**	1.00	**6.58**
256	Occ. Disease	Lack of a WHMIS program.	**2.63**	1.11	**2.50**	1.12	**6.58**
257	Explosives/ blasting	Heaters in magazines.	**2.38**	1.11	**2.75**	0.97	**6.55**
258	Explosives/ blasting	Not Ensuring explosives are Fume class 1.	**2.50**	0.87	**2.50**	0.87	**6.25**
259	Mine design	Mining into the shaft pillar	**2.25**	0.66	**2.75**	0.97	**6.19**
260	Explosives/ blasting	Portable or temporary explosive plants.	**2.25**	0.97	**2.63**	1.22	**5.92**
261	Occ. Disease	Inadequate maintenance of dry facilities (ie hygeine)	**2.50**	1.12	**2.13**	0.78	**5.33**
262	Explosives/ blasting	No central blasting system.	**2.50**	1.32	**2.13**	0.93	**5.33**
263	Mine design	Mining into the boundary pillar	**2.38**	1.32	**2.13**	1.17	**5.07**