

Occupational Health and Safety Branch

Mining Sector Plan

2012-2013

Safe At Work Ontario
Enforcement > Compliance > Partnership >

Ministry of Labour

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Introduction

Safe At Work Ontario is the Ministry of Labour's (MOL) strategy for enforcing the Occupational Health and Safety Act (OHSA) and its regulations. As part of *Safe At Work Ontario*, MOL develops annual sector-specific enforcement plans that focus on hazards and outline what inspectors will be looking for during an inspection. This Mining Sector Plan outlines the MOL's strategy to protect Ontario's mine workers from occupational injury and illness.

On November 1, 2010, Ontario launched a new provincial toll-free number – 1-877-202-0008 – to report workplace health and safety incidents or unsafe work practices. Anyone, anywhere in Ontario, may call to report a workplace health and safety incident, critical injury, fatality or work refusal, or with general inquiries. The number operates 24 hours a day, seven days a week.

Because on occasion there will be work done on mining sites that falls under the Industrial or Construction classification, it may be useful to be aware of current health and safety concerns and MOL enforcement activities for these sectors. They can be viewed at this link:

www.labour.gov.on.ca/english/hs/sawo/sectorplans/index.php.

Please refer to the e-laws website to download a copy of the OHSA and its regulations:

www.e-laws.gov.on.ca/navigation?file=browseStatutes&reset=yes&menu=browse&lang=en.

The Mining Sector

The Mining Sector in Ontario varies in location, setting and activity. It includes both large and small firms and includes unionized and non-unionized workplaces. It comprises both underground and surface operations as well as processing plants including mills, smelters and refineries. This sector also includes sand and gravel operations, mineral exploration sites and oil and gas extraction facilities.

The Mining Sector includes the following key sub-sectors:

- **Underground mines** – Includes ramp or shaft (conveyance) access mines and can involve a variety mining methods such as bulk or narrow-vein mining
- **Open pit mines and quarries** – Surface operations that typically involve large scale drilling, blasting, crushing, sizing and trucking
- **Sand and gravel pit operations** – Range in size from small open pits to large scale operations with hundreds of pieces of mobile equipment (typically, these operations do not involve blasting)
- **Mineral exploration sites** – Surface operations that typically involve diamond drilling and bulk sampling to determine ore reserve potential
- **Mining plants** – Includes mills, blast furnaces, smelters and refineries
- **Oil and gas extraction sites and facilities** – Includes site and facilities both on land and on water.

The number of workers registered under each sub-sector of the Mining Sector between 2007 and 2011 is shown in the table below. (MOL Trend Analysis Data from INB & ICE).

Sub-sector	2007	2008	2009	2010	2011
Diamond drilling	1,242	1,385	1,514	1,692	1,740
Mills	2,645	2,645	2,643	1,922	1,817
Oil and natural gas	815	831	876	909	934
Open pit mines	946	966	967	1,082	1,073
Quarries	5,996	6,091	6,114	6,229	6,224
Sand and gravel pits	11,979	12,145	12,431	12,710	12,289
Refineries	1,008	1,008	1,008	675	675
Smelters	1,330	1,330	1,330	1,346	1,142
Surface plants	7,731	8,020	8,821	9,075	8,907
Underground mines	13, 563	13,532	15,582	16,187	16,072

The number of premises registered under each Mining sub-sector between 2007 and 2011 is shown in the table below. (MOL Trend Analysis Data from INB & ICE).

Sub-sector	2007	2008	2009	2010	2011
Diamond drilling	256	288	322	360	371
Mills	39	39	38	39	36
Oil and natural gas	368	372	384	392	395
Open pit mines	92	96	96	106	104
Quarries	838	848	860	889	886
Sand and gravel pits	5,709	5,735	5,837	5,917	5,796
Refineries	10	10	10	8	8
Smelters	7	7	7	7	6
Surface plants	164	177	179	179	177
Underground mines	197	205	222	234	229

Ministry of Labour compliance focus for the Mining Sector for 2012-2013

Partnerships: a key success factor

The MOL is one of several partners in the health and safety system in Ontario focused on preventing and reducing injuries and illnesses. The MOL's Mining Health and Safety Program (MHSP) works collaboratively with a number of external and internal partners to improve health and safety.

Through the Sector Inter-agency Group (SIG), the MHSP meets regularly with representatives from the Workplace Safety North (WSN) and the Workplace Safety Insurance Board (WSIB). This group provides a forum to share concerns and develop and coordinate solutions to issues as they arise in the field.

One of the most prominent partnerships that the MHSP is involved in is the Mining Legislative Review Committee (MLRC). The MLRC is a committee established under Section 21 of the OHSA to provide advice to the Minister of Labour (the Minister) on health and safety in the Mining Sector. Meeting regularly, the MLRC allows for dialogue on safety concerns between industry management and labour and submits joint recommendations to the Minister for improvements.

Other key stakeholder groups that the MHSP routinely collaborates with are as follows:

- The Ontario Mine Contractors Safety Association
- The Canadian Diamond Drillers Eastern Safety Group
- Various WSN Technical Advisory Committees
- The Ministry of Trades, Colleges and Universities Mining Tripartite Committee

Legislation

A number of changes have been made to the Mining Regulations this past year. These amendments came into force on January 1, 2012, and include:

- Updating training requirements to reflect changes in the training programs and clarifying the time limits for completing training
- Introducing occupational noise limits consistent with those found in other regulations under OHSA
- Updating diesel exhaust exposure limits to position Ontario as a leader in protecting underground miners from exposure to carbon monoxide
- Updating air volume requirements to protect underground miners from exposure to diesel particulate matter
- Strengthening hoisting requirements
- Improving worker safety in shaft sinking work
- Strengthening protections related to work on wheel and tire assemblies, and
- Modernizing provisions to reflect the current administration of the mine rescue program.

Enforcement focus

The following enforcement plan outlines the *Safe At Work Ontario* enforcement strategy that will be executed by MHSP inspectors for those hazards that are specific to the MHSP.

The MHSP inspectors are designated MOL health and safety inspectors. Beyond the proactive work that will be carried out by these inspectors through *Safe At Work Ontario*, the overall work plan for the MHSP inspectors also includes reactive work in the form of investigations.

Injury rates and chronic violators

Workplaces that have higher-than-average lost-time injury (LTI) rates are the focus of inspections in the Mining Sector this year.

Special enforcement focus for 2012-2013

MOL inspectors enforce the OHSA and its regulations at workplaces across the province. As part of the *Safe At Work Ontario* strategy, they focus on specific industry sectors where there are high injury rates, chronic violators, and workplace hazards. They will also continue to ensure overall compliance with the OHSA and its regulations. Inspectors are not limited to the issues identified in this document as major hazards or key health and safety issues, and will take enforcement action appropriate for the conditions at each workplace inspected.

Mining Sector heightened enforcement campaigns (blitzes)

Heightened enforcement campaigns afford a stronger, focused enforcement and awareness opportunity on key hazards and prevention approaches. These allow inspectors to focus on very specific health and safety issues unique to the sector, while also promoting general compliance. They also raise awareness at the workplace level to encourage regular compliance.

In July, 2012, the MHSP will embark on a campaign focused on hazards associated with haulage activities in surface mines. During this campaign, some of the areas that MHSP personnel will focus on are hazards associated with:

- Improperly maintained haulage roads
- Collisions with other vehicles or pedestrians and roll-overs
- Over loaded haulage vehicles
- Improperly secured loads
- Improperly maintained haulage vehicles
- Improper mounting and dismounting of vehicles
- Lack of proper loading and dumping procedures
- Contact with power lines
- Poor weather conditions resulting in slippery haulage roads
- Lack of dust control
- Improper traffic controls
- Working from heights
- Excessively steep or narrow haulage roads.

In November and December 2012, the MHSP will embark on a campaign focused on hazards associated with ore passes and loading pockets in underground mines. During this campaign, some of the areas that MHSP personnel will focus on are hazards associated with:

- Inadequate water control methods applied at loading pockets and chutes
- Water used to resolve hang-ups in chutes

- Lack of appropriate procedures restricting use of water at or near passes
- Inadequate loading pocket design
- Inadequate ore pass control gate design.

In January and February 2013 the MHSP will embark on a campaign focused on hazards associated with inadequate ventilation in underground mines. This campaign will focus on compliance with the recent amendments to Part 8 of the Regulation for Mines and Mining Plants. These amendments came into force on January 1, 2012. The new requirements involve improved testing for diesel exhaust to protect workers from exposure to carbon monoxide, and the introduction of new limits for total carbon. During this campaign, MHSP personnel will confirm that the employer has:

- Developed procedures in consultation with joint health and safety committees to test diesel powered equipment, and that these procedures include testing each individual piece of diesel-powered equipment where practical under a fully loaded condition.
- Verified that undiluted tail pipe limits for carbon monoxide contain less than 600 parts per million by volume of CO.
- Verified that air flow is at least 0.06 cubic metres per second for each kilowatt of power of the diesel-powered equipment operating.
- Verified that the time-weighted exposure of a worker to total carbon is not more than 0.4 milligrams per cubic metre of air.
- Performed testing to ensure air quality in underground mines is being met.

Also, during the 12 months beginning April 1, 2012, MHSP inspectors will participate in a cross-program heightened enforcement campaign to be conducted by the Health Care, Construction, Mining and Industrial Programs which will focus on Musculoskeletal Disorder (MSD) hazards.

Injury and illness trends

Lost-time injury (LTI) rates between 2007 and 2010 for three of the key Mining sub-sectors are shown in the table below for several Mining sub-sectors (WSIB data).

Sub-sector	2007	2008	2009	2010
Oil and natural gas	0.44	2.98	2.33	3.96
Quarries	2.59	2.19	1.38	1.42
Underground mines	1.16	1.01	0.80	0.71

The numbers of fatalities reported to the MOL between 2007 and 2011 for various Mining sub-sectors are shown in the table below. (MOL Trend Analysis Data from INB & ICE).

Sub-sector	2007	2008	2009	2010	2011
Assay laboratories	0	0	0	0	0
Diamond drilling	0	0	0	0	0
Mills	0	0	0	0	0
Oil and natural gas	0	0	0	0	0
Open pit mines	0	0	0	0	0
Quarries	1	1	0	0	0
Sand and gravel pits	0	0	0	1	0
Refineries	0	0	0	0	0
Smelters	0	0	0	0	0
Surface plants	0	0	1	0	1
Underground mines	3	1	0	0	4

The numbers of critical injuries reported to the MOL between 2007 and 2011 for various Mining sub-sectors are shown in the table below. (MOL Trend Analysis Data from INB & ICE)

Sub-sector	2007	2008	2009	2010	2011
Diamond drilling	1	3	1	3	5
Mills	1	1	1	1	3
Oil and natural gas	0	0	0	0	0
Open pit mines	1	0	0	0	0
Quarries	2	4	1	2	8
Sand and gravel pits	0	4	1	2	1
Refineries	1	1	1	0	0
Smelters	2	1	2	0	1
Surface plants	4	6	4	6	3
Underground mines	20	14	11	11	10

Health and safety characteristics of the Mining Sector

The numbers of field visits (total field visits/proactive field visits) conducted by the ministry between 2007 and 2011 for various Mining sub-sectors are shown in the table below (MOL Trend Analysis Data from INB & ICE).

Sub-sector	2007	2008	2009	2010	2011
Diamond drilling	170/163	174/165	133/130	184/176	295/274
Mills	112/84	103/68	75/56	55/42	82/41
Oil and natural gas	20/20	14/14	16/16	23/23	18/12
Open pit mines	119/102	68/57	55/41	54/46	94/89
Quarries	997/958	648/581	685/647	594/560	501/438
Sand and gravel pits	2,167/2,116	1,629/1,575	1,676/1,640	1,591/1,560	1,103/1,067
Refineries	66/32	59/28	28/17	13/11	19/8
Smelters	47/18	34/27	26/12	33/22	29/13
Surface plants	327/254	273/218	228/168	224/153	188/124
Underground mines	803/560	712/471	760/569	583/420	554/333

The numbers of orders issued by the MOL between 2007 and 2011 for various Mining sub-sectors in the Mining Sector are shown in the table below (MOL Trend Analysis Data from INB & ICE).

Sub-sector	2007	2008	2009	2010	2011
Diamond drilling	380	506	149	558	918
Mills	119	42	46	63	103
Oil and natural gas	18	12	11	10	11
Open pit mines	79	37	24	13	145
Quarries	1,011	682	623	527	475
Sand and gravel pits	2,071	2,036	1,555	1,071	841
Refineries	38	24	12	5	6
Smelters	49	21	16	28	12
Surface plants	259	187	93	157	204
Underground mines	825	884	764	656	1,052

Health and safety hazards inherent in Mining Sector work

In the recent past, fatalities in the underground mining sub-sector have been associated with the following events:

- Workers being engulfed by wet muck flowing from a draw-point
- A worker being struck by a fall of ground while at the face of a new heading
- A worker being struck by a load-haul-dump unit while working in a drift

In the diamond drilling sub-sector, several entanglements with rotating drill steel have resulted in serious injuries.

In the Mining Sector, specific processes are typically characterized by inherent hazards. However, there are some hazards that are common to multiple processes, including the following:

- Exposure to noise, diesel emissions, dust and vibration
- Inadequate guarding on moving machinery parts and conveyors
- Working from heights
- Tripping and slipping hazards, unsafe workplaces and walkways.

Major hazards and inspection focus

MOL inspectors enforce the OHSA and its regulations at workplaces across the province. As part of the *Safe At Work Ontario* strategy they give special focus to certain specific sub-sector and workplace hazards, but will continue to ensure overall compliance with the OHSA and its regulations. Inspectors are not limited to the issues identified in this document as major hazards or key health and safety issues, and will take appropriate enforcement action based on the facts at each individual workplace inspected.

Major hazards and key health and safety issues	MOL mining health and safety inspection focus
Falls of persons	• Are portable ladders adequately secured when in use? • Are proper fall arrest systems being used when required? Are procedures for rescue in place? • Are required guardrails in place?
Vehicle-worker contact	• Are remote stands for underground mucking operations adequately secure from vehicle impact? • Do vehicle operators understand and practice company traffic procedures? • Is the reflective striping on hardhats and clothing worn by pedestrians adequate? Is it faded and worn?
Ground instability	• Is ground support adequate in underground workplaces where workers are required to work? • Are ground support installation procedures being followed by workers? • Is there a ground support quality control program in place? • Do workers know the proper procedures for dealing with seismicity in underground mines?
Occupational disease	• What WHMIS-controlled substances are present in the workplace? • Are ventilation systems properly designed? • Are there adequate ventilation monitoring programs in place? • Is adequate ventilation equipment in place and being well maintained? • Are dust suppression systems adequate?

Major hazards and key health and safety issues	MOL mining health and safety inspection focus
Blasting hazards	• Have blasts been properly designed and are blast designs being followed? • Do workers doing blasting know the proper wait times for re-entry after a blast? • Are the effects of static electricity regarding possible transfer through bolts, pipes or screen? • Do workers know and practice proper clearing, guarding and gas-checking procedures? • At surface operations using sirens or alarms before blasts? • Are there proper procedures for storing and transporting explosives?

Summary and highlights

MOL inspectors will continue to visit proactively and review health and safety practices in mining operations, especially involving the more known hazards: hoist plants; shaft inspection; shaft sinking; explosives use and storage; and electrical practices. They will also continue to assess and promote, along with system partners, the development of a strong and sustainable health and safety culture (IRS) in the Mining Sector.

For more information on mining health and safety, visit the MOL website at www.labour.gov.on.ca.