



Occupational Health and Safety Branch

Mining Sector Plan

2011-2012

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 consists of the following key sub-sectors:

- **Underground mines** – Includes ramp or shaft (conveyance) access mines and can involve a variety of 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 2010 is shown in the table below. (MOL MIS/INB data).

Sub-sector	2007	2008	2009	2010
Assay laboratories	799	816	825	846
Diamond drilling	1,242	1,385	1,514	1,692
Mills	2,645	2,645	2,643	1,922
Oil and natural gas	815	831	876	909
Open pit mines	946	966	967	1,082
Quarries	5,996	6,091	6,114	6,229
Sand and gravel pits	11,979	12,145	12,431	12,710
Refineries	1,008	1,008	1,008	675
Smelters	1,330	1,330	1,330	1,346
Surface plants	7,731	8,020	8,821	9,075
Underground mines	13,563	13,532	15,582	16,187

The number of premises registered under each Mining sub-sector between 2007 and 2010 is shown in the table below. (MOL MIS/INB data).

Sub-sector	2007	2008	2009	2010
Assay laboratories	62	66	68	72
Diamond drilling	256	288	322	360
Mills	39	39	38	39
Oil and natural gas	368	372	384	392
Open pit mines	92	96	96	106
Quarries	838	848	860	889
Sand and gravel pits	5,709	5,735	5,837	5,917
Refineries	10	10	10	8
Smelters	7	7	7	7
Surface plants	164	177	179	179
Underground mines	197	205	222	234

Ministry of Labour compliance focus for the Mining Sector for 2011-2012

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 OHS Act 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

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 2011-2012

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 June 2011, the MHSP will embark on a campaign focused on the Diamond Drilling sub-sector. Since 2007, with the escalation of mineral exploration activity in Ontario, there has been a steady increase in the number of workers registered in the Diamond Drilling sub-sector. Moreover, this sub-sector employs a significant number of young and inexperienced workers, has experienced numerous critical injuries in the recent past, and is characterized by a large number of inherent hazards which can present a high level of risk to the safety of workers if not properly controlled. During this campaign, MHSP personnel will target all processes associated with this sub-sector and the key hazards linked to these processes. Some of the areas that MHSP personnel will focus on are hazards associated with:

- Traveling on water, snow, ice or rough terrain
- Exposure to extreme heat or cold, or to ultraviolet radiation
- Inadequate provisions for communications
- Inadequate provisions for fire prevention and control
- Inadequate emergency response planning
- Use of chain saws and other means of tree and vegetation removal
- Working from heights

- Use and storage of explosives
- Handling of heavy drill rig components, drill rods and core boxes
- Skidding and rigging
- Drilling into high pressure water or gas
- Exposure to rotating drill rods.

The Diamond Drilling sub-sector blitz will also focus on training and supervision.

In July 2011, the MHSP will embark on a campaign focused on the Pits and Quarries, and Sand and Gravel Pits sub-sectors. During this campaign, MHSP personnel will target the crushing, screening and conveying processes and the key hazards linked to these processes. Some of the areas that MHSP personnel will focus on are hazards associated with:

- Lack of adequate lock and tag procedures
- Improperly maintained equipment
- Lack of appropriate guarding and pull cords
- Working from heights
- Inadequate ladders, walkways and platforms
- Exposure to dust, noise and vibration.

In October 2011, the MHSP will embark on a campaign focused on ventilation hazards associated with the key processes in the Underground Mining sub-sector. Lack of proper ventilation in underground mines can result in worker exposure to environments characterized by insufficient levels of oxygen or high levels of dust, diesel emissions and blasting gases. Worker exposure to such environments can result in a variety of industrial diseases, many which have long latency periods and do not produce symptoms until significant time has lapsed following exposure. During this campaign, MHSP personnel will verify that proper measures for controlling the risks associated with such hazards are in place and will look for the following:

- That ventilation designs and plans have been properly prepared and are up-to-date
- That proper ventilation monitoring programs are in place and that monitoring results are being properly responded to
- That required mine ventilation equipment (i.e., fans, ducting, dust suppression systems and ventilation doors) is in place and is well maintained
- That required diesel emission control systems are in place and functioning properly.

In late 2011, 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. At time of writing (March 2011) the details of this campaign were being finalized.

Injury and illness trends

Lost-time injury (LTI) rates between 2007 and 2009 for three of the key Mining sub-sectors are shown in the table below for several Mining sub-sectors (WSIB data).

Sub-sector	LTI rate in 2007	LTI rate in 2008	LTI Rate in 2009
Oil and natural gas	0.00	2.07	3.09
Quarries	2.02	1.95	1.42
Underground mines	1.11	0.96	0.82

The numbers of fatalities reported to the MOL between 2007 and 2010 for various Mining sub-sectors are shown in the table below. (MOL INB/MIS data).

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

The numbers of critical injuries reported to the MOL between 2007 and 2010 for various Mining sub-sectors are shown in the table below. (MOL INB/MIS data)

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

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 2010 for various Mining sub-sectors are shown in the table below (MOL INB/MIS data).

Sub-sector	2007	2008	2009	2010
Assay laboratories	42/42	35/32	27/25	29/32
Diamond drilling	170/163	174/165	133/130	184/176
Mills	112/84	103/68	75/56	55/42
Oil and natural gas	20/20	14/14	16/16	23/23
Open pit mines	119/102	68/57	55/41	54/46
Quarries	997/958	648/581	685/647	594/560
Sand and gravel pits	2,167/2,116	1,629/1,575	1,676/1,640	1,591/1,560
Refineries	66/32	59/28	28/17	13/11
Smelters	47/18	34/27	26/12	33/22
Surface plants	327/254	273/218	228/168	224/153
Underground mines	803/560	712/471	760/569	583/420

The numbers of orders issued by the MOL between 2007 and 2010 for various Mining sub-sectors are shown in the table below (MOL INB/MIS data).

Sub-sector	2007	2008	2009	2010
Assay laboratories	43	57	14	11
Diamond drilling	380	506	149	558
Mills	119	42	46	63
Oil and natural gas	18	12	11	10
Open pit mines	79	37	24	13
Quarries	1,011	682	623	527
Sand and gravel pits	2,071	2,036	1,555	1,071
Refineries	38	24	12	5
Smelters	49	21	16	28
Surface plants	259	187	93	157
Underground mines	825	884	764	656

Health and safety hazards inherent in Mining Sector work

In the recent past, fatalities and serious injuries in key Mining sub-sectors have been associated with the following processes:

- Shaft sinking, raise development and mucking and haulage in the Underground Mining sub-sector
- Crushing, conveying and production drilling in the Pits and Quarries and Sand and Gravel Pits sub-sectors
- Setting up drill rigs and drilling in the Diamond Drilling sub-sector

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, dust and vibration
- Working from heights
- Exposure to ground instability
- Tripping and slipping hazards.

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?
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 blasting wires and cables kept free from possible effects of static electricity 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/english/hs/topics/mining.php.