



Occupational Health and Safety Branch

Construction Sector Plan

2012-2013

Safe At Work Ontario
Enforcement > Compliance > Partnership >

Ministry of Labour

Contents

Introduction	4
Ontario's construction industry	4
<i>Construction looking forward – 2012 through 2017</i>	4
Ontario's diving industry	5
The construction sector	5
<i>Asbestos abatement operations</i>	5
<i>Industrial, Commercial and Institutional (ICI)</i>	6
<i>Residential</i>	6
<i>Roads</i>	6
<i>Underground</i>	6
<i>Utilities</i>	6
<i>Window cleaning</i>	6
<i>Other construction</i>	6
Enforcement focus	7
Special enforcement focus for 2012-2013	7
<i>Construction heightened enforcement campaigns</i>	7
<i>Occupational illnesses and diseases</i>	7
<i>Noise-induced hearing loss</i>	8
<i>Infectious diseases</i>	8
Injury and illness trends	9
Asbestos operations	10
Health and safety characteristics	10
<i>Asbestos operations</i>	10
<i>Asbestos operation – Type 1 removal</i>	12
<i>Top hazard-based orders – Asbestos Type 1 removal:</i>	12
<i>Asbestos operation – Type 2 removal</i>	13
<i>Top hazard-based orders – Asbestos Type 2 removal:</i>	13
<i>Asbestos operation – Type 3 removal</i>	14
<i>Top hazard-based orders – Asbestos Type 3 removal:</i>	14
Major hazards and inspection focus	15
Industrial, Commercial and Institutional (ICI)	18
Health and safety characteristics	18
<i>Industrial building construction</i>	19
<i>Top hazard-based orders – Industrial building construction:</i>	19
<i>Commercial building construction</i>	20
<i>Top hazard-based orders – Commercial building construction:</i>	20
<i>Institutional building construction</i>	21
<i>Top hazard-based orders – Institutional building construction:</i>	21
<i>Mining plant construction, above ground</i>	22
<i>Top hazard-based orders – Mining plant construction, above ground:</i>	22
Major hazards and inspection focus	23
Construction	1

Residential	25
Health and safety characteristics	25
<i>High-rise residential</i>	25
<i>Apartment and other multiple housing</i>	26
<i>Top hazard-based orders – Apartment and other multiple housing:</i>	26
<i>Low-rise residential (single-family housing)</i>	27
<i>Top hazard-based orders – Low-rise residential (single-family housing):</i>	28
Major hazards and inspection focus	29
Roads	32
Health and safety characteristics	32
<i>Highway and road construction</i>	33
<i>Top hazard-based orders – Highway and road construction:</i>	33
<i>Bridge construction</i>	34
<i>Asphalt paving</i>	35
<i>Top hazard-based orders – Asphalt paving:</i>	36
Major hazards and inspection focus	36
Utilities	39
Health and safety characteristics	39
<i>Hydro-electric (underground services)</i>	40
<i>Top hazard-based orders – Hydro-electric (underground services):</i>	40
<i>Gas and oil pipelines</i>	41
<i>Top hazard-based orders – Gas and oil pipelines:</i>	42
<i>Cable</i>	43
<i>Hydro-electric power plants, above-ground power and distribution lines, transmission and electrical towers</i>	44
<i>Top hazard-based orders – Hydro-electric power plants, above-ground power and distribution lines, transmission and electrical towers:</i>	44
<i>Telephone service installations</i>	45
<i>Top hazard-based orders – Telephone service installations:</i>	45
Major hazards and inspection focus	46
Underground	49
Health and safety characteristics	49
<i>Underground (all sub-sectors)</i>	49
<i>Sewer and water main construction</i>	50
<i>Top hazard-based orders – Sewer and water main construction:</i>	51
<i>Trenching</i>	52
<i>Top hazard-based orders – Trenching:</i>	52
<i>Caisson construction</i>	53
<i>Top hazard-based orders – Caisson construction:</i>	54
<i>Cofferdam construction</i>	55
<i>Top hazard-based orders – Cofferdam construction:</i>	55
<i>Water-well drilling</i>	56
<i>Top hazard-based orders – Water-well drilling:</i>	57
<i>Excavation, grading and construction/shaft construction</i>	58
<i>Top hazard-based orders – Excavation, grading and construction/shaft construction:</i>	59

<i>Tunnelling</i>	60
<i>Top hazard-based orders – Tunnelling:</i>	60
<i>Subway and railway construction</i>	61
<i>Top hazard-based orders – Subway and railway construction:</i>	62
Major hazards and inspection focus	63
Window cleaning	66
Health and safety characteristics	66
<i>Window cleaning</i>	67
<i>Top hazard-based orders – Window cleaning:</i>	67
Major hazards and inspection focus	68
Other construction	70
Health and safety characteristics	70
<i>Other construction not elsewhere classified</i>	70
<i>Top hazards orders – Other construction not elsewhere classified:</i>	70
Major hazards and inspection focus	71
Diving	73
Health and safety characteristics	73
<i>Diving construction</i>	74
<i>Top hazard-based orders – Diving Construction:</i>	74
<i>Diving environmental</i>	75
<i>Top hazard-based orders – Diving environmental:</i>	75
<i>Diving at industrial establishments</i>	76
<i>Top hazard-based orders – Diving at industrial establishments:</i>	76
<i>Diving at mining projects and pits and quarries</i>	77
<i>Marine construction</i>	78
<i>Top hazard-based orders – Marine construction:</i>	78
<i>Shipbuilding and repairs</i>	79
<i>Top hazard-based orders – Shipbuilding and repairs:</i>	79
Major hazards and Diving inspection focus.....	80
Summary and highlights	81

Introduction

Ontario's construction industry

There are about 85,000 employers/contractors in Ontario's construction industry employing up to 476,200¹ workers and tradespersons. The industry comprises both large and small firms and includes unionized and non-unionized workplaces.

Construction is a dynamic industry characterized by workplaces and workforces that change constantly. Through the course of a typical project, 10 or more different employers may be involved, with as many as 10 different trades and trade unions on site as well. These multiple-employer and multiple-union workplaces are quite different from those in other industries. Although "construction" may describe all of the work being done, the individual activities are quite diverse.

As defined by the Occupational Health and Safety Act (OHSA), "construction" includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project (excluding any work or undertaking underground in a mine).

Most of the approximately 85,000 construction contractors in Ontario are small-to-mid-size employers. Almost 90 per cent of construction employers have fewer than eight employees. About one per cent employ more than 50 workers; however, these personnel are often deployed across several projects.

Although Ontario's construction industry is one of the safest in the world, with the lowest frequency of lost-time injuries (LTIs) in Canada at 1.20 LTIs per 100 employed construction workers², there is a high potential for injury, given the nature and conditions of the work. The MOL continues to work actively with its health and safety partners and external stakeholders to control and, where possible, to eliminate the top hazards in each sector and to promote compliance and the development of a strong health and safety culture in the workplace.

Another unique feature of the construction sector in Ontario is the special relationship between labour and management. Many construction managers and owners are often former trades-people. Ontario's construction industry includes both unionized and non-unionized employers and, on some sites, they work side-by-side.

Over the years, the unique needs of construction have been recognized and entrenched in Ontario legislation. A significant portion of the Labour Relations Act, 1995 is written specifically for the construction industry. Furthermore, the Employment Standards Act, 2000, the Workplace Safety and Insurance Act, 1997 and, most notably, the OHSA, all include distinct requirements for the construction sector.

Construction looking forward – 2012 through 2017

The Construction Sector Council report *Looking Forward 2010-2017 Key Highlights* has identified that while the recession has somewhat weakened housing and industrial construction in Ontario, the balance of the construction industry is expected to see some employment gains in 2012-2013 and beyond. Recent surveys conducted by the Ontario Construction Secretariat (OCS) have indicated that

¹ Source: Statistics Canada, Labour Force Survey; Geography = 'Ontario' (Seasonally Adjusted Figures), February 2011.

² Source: 2009 Association of Workers' Compensation Boards of Canada, National Work Injury, Disease and Fatality Statistics 2007–2009. Construction

Ontario contractors across the province are most likely to have a positive appraisal of the current economic situation, despite recently announced restraints and austerity measures.¹ OCS projects data is suggesting that nearly \$500 billion worth of industrial and engineering work will take place in northern Ontario in 2012. In the residential sector, condominium construction in most major Ontario cities continues to be strong as low interest rates hold and residential construction investments show modest gains. Business confidence while showing some gains in the construction industry is still subject to the economic uncertainty created by the state of the global economy and, overall, this will likely result in modest gains in construction activity.

From 2012 to 2017, forecasted construction employment will likely see growth at 2.0 per cent². These additions to the workforce will come as the overall growth in the Ontario labour force slows to one per cent or less. Construction employers will be competing for a steadily growing share of the provincial workforce³.

Ontario's diving industry

The Diving Operations Regulation (O. Reg. 629/94) defines a "diving operation" as work performed underwater by divers or work performed on the surface in support of divers, and includes underwater inspection, investigation, excavation, construction, alteration, repair or maintenance of equipment, machinery, structures or ships and the salvage of sunken property. There are approximately 75 Ontario diving industry contractors in Ontario and approximately ten out-of-province employers providing diving services by some 400 workers. On average the MOL receives between 1,200 to 1,400 notices of diving operations every year.

Ontario diving contractors carry out business across all regions of the province and compete with out-of-province contractors for their work.

The construction sector

Ontario's diverse and complex construction industry is made up of a number of primary sectors, each with sub-sectors:

Asbestos abatement operations

- Asbestos abatement operations include removal operations involving the repair, alteration, renovation, demolition and maintenance of buildings and the repair, alteration, maintenance or demolition of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles. Asbestos abatement workers, maintenance workers, construction trades, and other workers engaged in "asbestos operations" may be exposed to asbestos during the removal or disturbance of asbestos-containing-material in buildings or structures like boilers, pipes and other mechanical equipment.
- For the purposes of enforcement of O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations), operations that may expose a worker to asbestos are classified as Type 1, Type 2 and Type 3 operations. As the risk increases from Type 1 to Type 2 to Type 3 operations, the protective measures and procedures prescribed in the Regulation become increasingly stringent.

¹ Source: Ontario Construction Secretariat, "Eye on ICI" newsletter March 2012

² Source: Construction Sector Council: Construction Looking Forward 2009-2017 Key Highlights

³ Source: Ibid

Industrial, Commercial and Institutional (ICI)

The ICI sector comprises high- and low-rise industrial, commercial and institutional building projects, and above-ground mining plants.

Residential

Made up of both high-rise (i.e., apartment and other multiple housing) and low-rise residential projects, including “in-fill” housing, single homes, multiple housing (e.g., townhouses) and renovations and additions, the sector is characterized by multiple contractors and independent operators.

Roads

Includes heavy civil works or infrastructure comprising highway and road construction, both new construction and rehabilitation of existing highways and roads, bridge work, and asphalt paving operations.

Underground

Includes primarily sewer and water main construction, trenching, excavations, caisson and cofferdam construction, shaft construction, tunnelling, and subway and railway construction.

Utilities

Includes the construction of underground utilities (gas and oil pipelines, hydro-electrical power, telephone, cable) and above-ground power and distribution lines, transmission and electrical towers.

Window cleaning

Consists of window cleaning services for buildings and the cleaning of windows where a worker may fall a vertical distance of three metres or more.

Other construction

Projects not captured in other sectors such as silo construction, moving buildings and structures and other construction not elsewhere classified.

Enforcement focus

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, history of non-compliance, and certain workplace hazards. They will also check 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.

Construction heightened enforcement campaigns

In addition to their general inspection duties, inspectors will participate in provincial and regional construction health and safety campaigns. In 2012-2013, the Construction Health and Safety Program (CHSP) will conduct the following heightened enforcement campaigns throughout the Province of Ontario:

Focus	Date: 2012-13
Struck by Objects (hazards associated with traffic control during roadwork)	May 2012
New and Young Worker*	May – August 2012
Tower cranes / Mobile cranes / Hoisting hazards	June 2012
Engagement Focus in Construction supervisory responsibilities, training and requirements under Ontario Regulation 213/91 (Construction Projects), section 14	September – October 2012
Slips, Trips and Falls* (includes ladder safety and fall protection hazards across all construction sectors, sub-sectors, and trades)	February – March 2013

* Cross-Program heightened enforcement campaigns

During visits, ministry inspectors will continue to refer workplace parties to the [MOL's website](#), the [Infrastructure Health and Safety Association](#), and the [Workers Health and Safety Centre](#), where health and safety resource materials and tools are available.

Occupational illnesses and diseases

The Construction Health and Safety Program will continue to address occupational health hazards that may lead to occupational illness and disease. Within Ontario's construction industry, occupational diseases have caused the deaths of more workers or former workers in the past 10 years than

traumatic occupational injuries have. Most of these occupational diseases were caused by past exposure to asbestos. Non-fatal diseases related to construction, such as noise-induced hearing loss, affect hundreds of construction workers in Ontario every year.

In 2012-2013, the Construction Health and Safety Program (CHSP) will continue to further its *“Occupational Illness and Disease Strategy”* to address related hazards that lead to occupational illness and disease. This strategy will focus on high-risk activities and the construction trades that are exposed to asbestos, other designated or hazardous substances, controlled products, carbon-monoxide and noise.

Ministry inspectors will check compliance with the Occupational Health and Safety Act and its regulations, including O. Reg. 213/91 (Construction Regulation), O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) and O. Reg. 860 (Workplace Hazardous Materials Information System) where controlled substances are to be used at a project.

Noise-induced hearing loss

Noise exposure is one of the most widespread health hazards in construction responsible for significant number of noise-induced hearing loss (NIHL) WSIB lost-time injury claims. Although Ontario’s occupational exposure limits for noise do not currently apply to construction projects, employers in the industry are still required to take every reasonable precaution reasonable in the circumstances for the protection of workers. Occupational exposure limits for sound may be considered when determining whether a construction employer has met that general obligation. Ministry inspectors and hygienists will focus on ensuring that construction workers are protected from excessive noise levels by checking that workers are provided with appropriate hearing protection in accordance with section 21 of O. Reg. 213/91 (Construction Regulation). Employers will be encouraged to voluntarily develop a hearing conservation program that includes pre-employment and periodic audiometric testing to detect hearing changes before they occur.

Infectious diseases

Infectious diseases acquired from biological agents present in the workplaces, including biological agents generated by human waste, are “occupational illnesses”. The provision of adequate toilet and clean-up facilities, proper removal and disposal of waste and the provision of hot and cold running water and soap is essential to protecting workers against infectious diseases and occupational illnesses. The ministry recognizes the importance of proper hand hygiene in the prevention of infectious diseases. It also recognizes that inadequate sanitation (provision of facilities and services for the safe removal and disposal of human waste) presents a health risk to humans.

During the course of regular inspections at Ontario construction sites, ministry inspectors will continue to check compliance with section 31 of the Occupational Health and Safety Act which requires that suppliers provide adequate facilities and section 29 of Ontario Regulation 213/91 (Construction Projects) to make certain that adequate facilities (toilet, urinal and clean-up facilities) are provided at every project and that they are properly serviced and sanitized.

The Ministry of Labour staff continue to work closely with the suppliers of facilities to ensure that a common standard is developed for all construction projects which meet requirements of Ontario Regulation 213/91. The Ministry of Labour expects to see cleanup facilities that provide workers with hot and cold running water and sufficient toilets for the number of workers on the project. Suppliers have options available where permanent electrical power is not available or connection to this water system is not possible.

Ministry inspectors will also continue to refer workplace parties to the [MOL's website](#), the [Infrastructure Health and Safety Association](#), Workers' Health and Safety Centre, Occupational Health and Safety Clinics for Ontario Workers and the [Workplace Safety and Insurance Board](#) (e.g., [Program of Care for Noise Induced Hearing Loss](#)) for information and resources.

Injury and illness trends

The Ministry uses WSIB data to identify injury and illness trends. Trend analyses of the number of fatalities, critical injuries, LTIs, LTI rates and the costs associated with WSIB claims for each sector are used by inspectors to plan their inspections of projects. Hazards inherent in the work and compliance history are other selection criteria.

When reviewing occupational injury and illness data at the individual firm level, inspectors check that workplace parties comply with the OHSA and its regulations and will encourage workplaces to establish and enhance appropriate measures and procedures and best practices for maintaining a safe and healthy workplace. During their workplace visits to enforce the OHSA and its regulations, inspectors also consider hazards that contribute to the root cause of injuries.

Construction injury performance indicator	2005	2006	2007	2008	2009	2010	2011
Traumatic fatalities, all causes	21	27	15	19	17	24	22
Deaths due to occupational disease	36	40	42	N/A	N/A	N/A	N/A
Traumatic critical injuries, all causes	220	208	196	183	194	145	133
Fatalities per 100,000 employed construction workers	5	7	4	4	4	6	N/A
Critical injuries per 100,000 employed construction workers	55	49	47	35	42	32	N/A
Lost-time injuries per 100 employed construction workers	1.58	1.45	1.38	1.38	1.20	N/A	N/A

STATISTICS ARE COMPILED BY CALENDAR YEAR

While improvements in LTI rates and critical injury rates since 2005 are encouraging, additional effort is still possible and desirable to prevent construction worker deaths and other injuries, and their associated costs. Continued investment in health and safety is needed to build on these advances.

Asbestos operations

Health and safety characteristics

The asbestos operations sector includes high-risk work where asbestos workers and others may be exposed to health hazards (biological, physical [including ergonomic hazards] and chemical). This sector is further divided into three sub-sectors that correspond to the type of asbestos involved in an asbestos operation and the measures and procedures associated with that operation such as abatement or safe removal as prescribed by O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations):

- Asbestos operation Type 1
- Asbestos operation Type 2, and
- Asbestos operation Type 3.

O. Reg. 278/05 also applies to every building in which material that may be asbestos-containing material has been used, to the owner of the building, and to every employer and every worker engaged in building repair, alteration and maintenance and the demolition of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles..

Asbestos operations

Asbestos removal operations carried out in buildings and removal of asbestos before demolition of buildings, structures, ships and mechanical equipment (boilers, furnaces, process equipment, piping systems, etc.), including repair, alteration and maintenance operations where asbestos must be removed or disturbed by the work, may expose a large number workers to asbestos.

Asbestos abatement workers, construction trades (such as insulators, pipe trades, electricians, boilermakers, etc.) and other workers engaged in maintenance and repair operations involving asbestos work may be exposed to asbestos during the removal or disturbance of asbestos-containing material in buildings or mechanical structures like boilers, pipes and other mechanical equipment.

For the purpose of enforcing O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations), operations that may expose a worker to asbestos are classified as Type 1, Type 2 and Type 3 operations. As the risk increases from Type 1 to Type 2 to Type 3 operations, the protective measures and procedures prescribed in the Regulation become increasingly stringent.

This following chart summarizes information relating to asbestos removal projects.

Asbestos removal Type 1, 2, & 3	2006	2007	2008	2009	2010	5-year Total
Lost-time injuries	31	34	25	25	36	151
Asbestos removal Type 1, 2, & 3	2006	2007	2008	2009	2010	5-year Average ⁶
Lost-time injury rate per 100 full-time workers	1.51	1.36	0.99	1.07	1.53	1.28

STATISTICS ARE COMPILED BY CALENDAR YEAR

⁶ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

In 2010 (latest available figures), a total of 36 LTI claims amounted to \$209,994.

The four most costly types of traumatic injuries in descending order were:

- fall on same level or to lower level (\$61,311)
- fall to lower level (\$21,971)
- struck by object (\$21,967), and
- repetitive motion (\$19,094).

From 2007 to 2011, one traumatic fatality was reported to the MOL. This fatality occurred in 2007 and was related to a Type 2 asbestos operation. There were no traumatic critical injuries reported during this time.

According to WSIB data, the most costly claims in this sector are related to occupational illnesses and diseases. Available data for fatalities from occupational disease in the construction sector show that mesothelioma and lung cancer are the top occupational diseases, accounting for 82 per cent of all occupational disease fatalities for 1998-2007. Mesothelioma usually results from exposure to asbestos. Lung cancer may be attributed to exposure to asbestos and other carcinogens, such as lead and silica.

Details of the CHSP activities and events and injuries reported for each type of asbestos operation are presented in the tables below.

Asbestos operation – Type 1 removal

Trend analysis						
Asbestos operation - Type 1 removal						
Sector size.		2007	2008	2009	2010	2011
Registered projects		161	134	85	72	65
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁷		13	21	15	6	2
" inspections		11	18	12	6	2
" consultations		2	3	3	0	0
" investigations ⁸		6	21	4	2	15
Orders issued		11	27	2	9	21
Events and injuries		2007	2008	2009	2010	2011
Complaints		5	14	5	3	6
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		0	0	0	0	1

Top hazard-based orders – Asbestos Type 1 removal:

- personal protective equipment
- asbestos containing removal material prior to demolition
- fall protection
- measures and procedures of Type 1 operations
- methods for the analysis of material containing asbestos

⁷ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations.

⁸ Investigations are reactive workplace visits, which include investigations of complaints, work refusals, fatalities, critical injuries and other incidents.

Asbestos operation – Type 2 removal

Trend analysis						
Asbestos operation – Type 2 removal						
Sector size		2007	2008	2009	2010	2011
Registered projects		544	611	500	505	193
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁹		63	50	35	17	39
" inspections		62	45	35	16	39
" consultations		1	5	0	1	0
" investigations ¹⁰		34	31	10	5	30
Orders issued		19	72	34	32	71
Events and injuries		2007	2008	2009	2010	2011
Complaints		9	13	6	5	18
Work refusals		0	0	0	0	0
Fatalities		1	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		1	1	1	0	0

Top hazard-based orders – Asbestos Type 2 removal:

- scaffolding
- access egress (maintenance)
- ladders
- personal protective equipment
- electrical hazards

⁹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations.

¹⁰ Investigations are reactive workplace visits, which include investigations of complaints, work refusals, fatalities, critical injuries and other incidents.

Asbestos operation – Type 3 removal

Trend analysis						
Asbestos operation – Type 3 removal						
Sector size		2007	2008	2009	2010	2011
Registered projects		1,278	1,356	1,180	1,073	447
Program activities		2007	2008	2009	2010	2011
Proactive visits ¹¹		155	112	131	78	90
" inspections		148	109	129	76	85
" consultations		7	3	2	2	5
" investigations ¹²		37	24	26	35	49
Orders issued		113	101	113	66	138
Events and injuries		2007	2008	2009	2010	2011
Complaints		12	17	9	17	22
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		2	2	2	0	1

Top hazard-based orders – Asbestos Type 3 removal:

- measures and procedures
- equipment operation
- fall protection
- personal protective equipment
- scaffolding

¹¹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

¹² Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents
Construction

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, inspectors will focus on sector-specific workplace hazards, while continuing to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP for the asbestos operations sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits to workplaces in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use organizations' LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Electrical hazards	Routine inspections, including Electrical Safety Authority (ESA) partnering during investigations
Equipment, all types	Routine inspections on heavy and light equipment, focusing on: - adequate training - maintenance of vehicles, machinery, tools and equipment so that they do not endanger workers - manufacturers' operating manuals and instructions available where required by regulation, and - adequate written measures and procedures where required by regulation
Ergonomic issues	Routine inspections: during their regular Workplace visits, inspectors will focus on hazards that may lead to musculoskeletal disorders associated with selected construction activities that involve: - material handling - housekeeping - access and egress to work locations, and - maintenance of equipment. During workplace visits, MOL inspectors will continue to enforce the requirements of the Construction Regulation under sections: 35, 37(1), 70 (1), 72(a), and 93(1) dealing with housekeeping and material handling hazards due to poor housekeeping, obstruction to access and egress, material storing and lifting, maintenance of vehicles, machinery, tools and equipment that may lead to increased physical demand and working from awkward postures while carrying. Inspectors will pay particular attention to worker training, provision and maintenance of equipment, written measures and procedures and supervision for proper material lifting or pushing and pulling.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Falls	Routine inspections, including regional initiatives (strict enforcement of OHSA and regulations and referrals to Infrastructure Health and Safety Association (IHSA) and Workers Health and Safety Centre educational programs and industry outreach). Special enforcement blitz, February and March 2013.
Noise	Check adequacy of hearing protection as necessary to protect a worker from exposures to excess noise at construction projects (O. Reg. 213/91 s 21).
Occupational diseases and carbon monoxide	During inspections involving asbestos, other designated substances or toxic substances, inspectors should focus on checking: • compliance with O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) with a particular focus on Type 3 operations • that adequate measures and procedures are in place to control worker exposure, and • that adequate personal protective equipment is used e.g., glasses, face shields, appropriate respirators with special focus on hearing protection when operating noisy equipment. If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during workplace visits, inspectors will check that: • adequate measures and procedures are in place to control worker exposure, • adequate personal protective equipment is used, and • workers are adequately trained. At a building under construction where internal combustion engines are operating indoors and/or where fuel-burning heaters or devices are used in an enclosed space, inspectors will determine if the workplace is adequately ventilated, and if employers are maintaining their equipment in good operating condition.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Exposures to hazardous chemicals and substances	If controlled products are used at a project, inspectors will check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, inspectors will check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment including hearing protection is used, and • workers are adequately trained.

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Industrial, Commercial and Institutional (ICI)

Health and safety characteristics

The four ICI sub-sectors comprise a variety of building construction, including schools and universities, hospitals and health care institutions, manufacturing and other industries, as well as commercial enterprises and above ground mining plant construction. The four sub-sectors are:

- Industrial building construction
- Commercial building construction
- Institutional building construction, and
- Mining plant construction, above ground.

ICI construction	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	303	282	317	298	247	1,447
ICI construction	2006	2007	2008	2009	2010	5-year average ¹³
Lost-time injury rate per 100 full-time workers	1.48	1.28	1.34	1.29	1.22	1.32

STATISTICS ARE COMPILED BY CALENDAR YEAR

In 2010 (latest available figures), 247 LTI claims in this sector amounted to \$854,233

The four most costly types of injuries in descending order were:

- fall to lower level (\$212,431)
- bodily reaction (\$122,362)
- overexertion (\$113,257), and
- struck by object (\$83,101).

284 critical injuries and 28 fatalities were reported to the MOL between 2007 and 2011. The WSIB injury profile for this sector is drawn from nine different rate groups.

Details of the CHSP activities and events and injuries reported for each of the four ICI sub-sectors are presented in the tables below.

¹³ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Industrial building construction

Trend analysis						
Industrial building construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		4,875	4,485	4,231	4,528	2,604
Program activities		2007	2008	2009	2010	2011
Proactive visits ¹⁴		1,895	1,476	1,121	988	896
" inspections		1,870	1,451	1,108	976	875
" consultations		25	25	13	12	21
" investigations ¹⁵		425	348	254	214	302
Orders issued		4,733	3,218	2,066	1,824	1,879
Events and injuries		2007	2008	2009	2010	2011
Complaints		127	86	68	82	117
Work refusals		0	0	0	0	0
Fatalities		1	4	1	4	2
Critical injuries		8	21	7	7	15
Other incidents		58	58	37	27	50

Top hazard-based orders – Industrial building construction:

- personal protective equipment
- fall protection
- housekeeping
- material storage
- access and egress

¹⁴ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations.

¹⁵ Investigations are reactive workplace visits, which include investigations of complaints, work refusals, fatalities, critical injuries and other incidents.

Commercial building construction

Trend analysis						
Commercial building construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		14,255	14,265	15,070	16,598	9,443
Program activities		2007	2008	2009	2010	2011
Proactive visits ¹⁶		7,574	6,674	6,637	4,948	4,643
" inspections		7,524	6,626	6,583	4,906	4,573
" consultations		50	48	54	42	70
" investigations ¹⁷		1,278	1,443	1,363	1,308	1,279
Orders issued		18,590	17,360	14,399	12,142	12,186
Events and injuries		2007	2008	2009	2010	2011
Complaints		593	616	601	692	621
Work refusals		0	1	0	0	0
Fatalities		2	2	2	2	1
Critical injuries		30	31	35	25	28
Other incidents		125	156	145	89	117

Top hazard-based orders – Commercial building construction:

- personal protective equipment
- fall protection
- electrical hazards
- emergency procedures
- housekeeping

¹⁶ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations.

¹⁷ Investigations are reactive workplace visits, which include investigations of complaints, work refusals, fatalities, critical injuries and other incidents.

Institutional building construction

Trend analysis						
Institutional building construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		5,034	4,747	5,283	5,707	2,761
Program activities		2007	2008	2009	2010	2011
Proactive visits ¹⁸		2,875	2,522	2,700	2,496	1,775
" inspections		2,842	2,492	2,660	2,463	1,740
" consultations		33	30	40	33	35
" investigations ¹⁹		574	534	517	214	645
Orders issued		6,821	5,703	5,821	1,824	4,893
Events and injuries		2007	2008	2009	2010	2011
Complaints		228	217	238	296	299
Work refusals		2	1	0	2	0
Fatalities		0	2	1	2	2
Critical injuries		15	12	16	11	17
Other incidents		85	85	79	46	59

Top hazard-based orders – Institutional building construction:

- personal protective equipment
- fall protection
- housekeeping
- material storage
- electrical hazards

¹⁸ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations.

¹⁹ Investigations are reactive workplace visits, which include investigations of complaints, work refusals, fatalities, critical injuries and other incidents.

Mining plant construction, above ground

Trend analysis						
Mining plant construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		334	319	302	354	233
Program activities		2007	2008	2009	2010	2011
Proactive visits ²⁰		80	85	33	25	26
" inspections		66	71	32	25	25
" consultations		14	14	1	0	1
" investigations ²¹		27	15	1	5	19
Orders issued		199	85	24	33	174
Events and injuries		2007	2008	2009	2010	2011
Complaints		1	3	0	3	6
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		4	0	0	0	2
Other incidents		4	6	1	3	6

Top hazard-based orders – Mining plant construction, above ground:

- access and egress
- material storage
- ladders
- equipment use
- fall protection

²⁰ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations.

²¹ Investigations are reactive workplace visits, which include investigations of complaints, work refusals, fatalities, critical injuries and other incidents.

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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the ICI sector.

In addition to general enforcement of the OHSA and its regulations, inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013. Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Electrical hazards	Routine inspections proactive, including ESA partnering during investigations
Equipment, all types	Routine inspections on heavy and light equipment, focusing on: • adequate training and supervision • safe ladder use • maintenance of vehicles, machinery, tools and equipment so that they do not endanger workers • manufacturers' operating manuals and instructions available where required by regulation, and • adequate written measures and procedures where required by regulation
Ergonomic issues	See focus under Asbestos Removal Operations (all Types).
Falls between levels and slips and falls	Routine inspections proactive and reactive, including regional initiatives. Rigorous enforcement of requirements and referrals to IHSA and WHSC educational programs and industry outreach. Special enforcement blitz February and March 2013.
Noise	Check adequacy of hearing protection as necessary to protect a worker from exposures to excess noise (O. Reg. 213/91 s 21).
Occupational diseases	During inspections involving asbestos, other designated substances or toxic substances, inspectors should focus on checking: • compliance with O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) with a particular focus on Type 3 operations • that adequate measures and procedures are in place to control worker exposure, and • that adequate personal protective equipment is used e.g., glasses, face shields, appropriate respirators with special focus on hearing protection when operating noisy equipment.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
	If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc. and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure, • adequate personal protective equipment is used, and • workers are adequately trained. At a building under construction where internal combustion engines are operating indoors and where fuel-burning heaters or devices are used in an enclosed space, check that: • the workplace is adequately ventilated, and • employers maintain their equipment in good operating condition.
Exposure to hazardous chemicals and substances	If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc. and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment including hearing protection is used, and • workers are adequately trained.

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Residential

Health and safety characteristics

This sector is made up of both high-rise (i.e., apartments and condominiums) and low-rise residential projects, including “in-fill” housing, single homes, and multiple housing (e.g., townhouses). The sector is characterized by multiple contractors and independent operators. In 2010, injuries and illnesses in the residential sector amounted to more than \$3.52 million with 96 per cent of the residential injuries and illness attributable to the low-rise residential (homebuilding) sub-sector.

High-rise residential

High-rise residential	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	23	26	39	20	19	127
High-rise residential	2006	2007	2008	2009	2010	5-year average ²²
Lost-time injury rate per 100 full-time workers	1.42	1.45	1.97	1.12	1.22	1.45

STATISTICS ARE COMPILED BY CALENDAR YEAR

In 2010 (latest figures available), the number of LTIs and the LTI rate has decreased since 2008, about a 51 per cent and 48 per cent reduction respectively. This had been the greatest improvement in injury performance since 2006. In 2010, a total of 19 LTI claims amounted to \$51,854.

The four most costly injuries in descending order were:

- bodily reaction, not elsewhere classified (\$19,579)
- fall to lower level (\$13,308)
- struck by object (\$1,087), and.
- caught in or compressed by equipment or objects (\$866).

90 critical injuries and 16 fatalities were reported to the MOL in this sub-sector between 2007 and 2011.

Details of the CHSP activities and events and injuries reported for the high-rise residential sector are presented in the table below.

²² The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Apartment and other multiple housing

Trend analysis						
Apartment and condominiums						
Sector size		2007	2008	2009	2010	2011
Registered projects		4,097	4,185	4,699	5,352	2,798
Program activities		2007	2008	2009	2010	2011
Proactive visits ²³		3,776	3,074	3,240	2,483	2,137
" inspections		3,746	3,050	3,223	2,460	2,109
" consultations		30	24	17	23	28
" investigations ²⁴		1,057	1,121	1,169	1,218	1,025
Orders issued		12,385	11,041	10,047	8,390	7,883
Events and injuries		2007	2008	2009	2010	2011
Complaints		460	509	536	711	497
Work refusals		1	0	0	0	0
Fatalities		3	2	6	1	4
Critical injuries		23	17	17	15	18
Other incidents		85	113	117	66	93

Top hazard-based orders – Apartment and other multiple housing:

- personal protective equipment
- fall protection
- housekeeping
- protruding hazards
- access and regress

Generally, there are far fewer injuries and claims costs in the high-rise residential industry versus the low-rise residential/ homebuilding industry. A higher number of non-unionized, migrant and vulnerable workers (i.e., both new and young workers) seek employment in the low-rise residential (homebuilding) industry which contributes to increased injuries and higher claim costs.

²³ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

²⁴ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Low-rise residential (single-family housing)

Low-rise residential	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	499	503	564	422	443	2,431
Low-rise residential	2006	2007	2008	2009	2010	5-year average ²⁵
Lost-time injury rate per 100 full-time workers	2.39	2.24	2.17	1.84	2.87	2.26

STATISTICS ARE COMPILED BY CALENDAR YEAR

A total 443 LTI claims cost the homebuilding industry \$1,384,590 in 2010

The four most costly injuries in descending order were:

- fall to lower level (\$294,918).
- struck by object (\$269,709)
- overexertion (\$183,802), and
- fall on the same level (\$140,062).

From 2007 to 2011, 303 critical injuries and 24 fatalities were reported to the MOL. In general, many more critical injuries, fatalities and lost-time injuries occur in this sub-sector than any other part of the construction industry.

Workplace injuries and fatalities can usually be traced to a few root causes that may vary by sector. In May of 2011, the Ministry of Labour conducted a comprehensive compliance blitz of the low-rise residential (homebuilding) industry. This blitz sought to raise awareness of key health and safety hazards, to check that workplace parties complied with the law, and to discourage unsafe work practices that can cause injuries and illnesses.

Details of the CHSP activities and events and injuries reported for the low-rise residential/homebuilding sector are presented in the table below.

²⁵ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Low-rise residential (single family housing)

Trend analysis						
Low-rise residential (single family housing)						
Sector size		2007	2008	2009	2010	2011
Registered projects		17,293	17,348	16,771	17,920	10,059
Program activities		2007	2008	2009	2010	2011
Proactive visits ²⁶		10,916	8,553	7,605	5,368	5,477
" inspections		10,863	8,496	7,575	5,349	5,439
" consultations		53	57	30	19	38
" investigations ²⁷		1,825	1,856	1,839	1,915	1,448
Orders issued		33,556	27,498	21,007	18,199	19,801
Events and injuries		2007	2008	2009	2010	2011
Complaints		767	820	959	1,015	782
Work refusals		0	0	0	0	0
Fatalities		2	4	3	11	4
Critical injuries		61	57	78	57	50
Other incidents		255	223	187	172	110

Top hazard-based orders – Low-rise residential (single-family housing):

- personal protective equipment
- fall protection
- stairs
- emergency procedures
- housekeeping

²⁶ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

²⁷ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents
Construction

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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the residential sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Ministry of Labour health and safety inspectors enforce the Training Requirements for Certain Skill Sets and Trades Regulation 572/99 for the following trades: electricians, hoisting engineers, plumbers, refrigeration and air conditioning mechanics, sheet metal workers and steamfitters.

Upon request, employers and workers in these trades are required to provide written proof of authorization, such as a certificate of qualification or apprenticeship contract, to ministry inspectors. When on a construction site, inspectors will verify Certificate of Qualification and licensing information to effectively enforce the requirement under O. Reg. 572/99 that a worker not carry out work in a scheduled trade unless he/she is authorized to carry out work in that trade under the Trades Qualifications and Apprenticeship Act (TQAA).

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Electrical hazards	Routine inspections proactive and reactive, including ESA partnering during investigations
Equipment, all types	Inspections of heavy and light equipment, focusing on: - adequate training - maintenance of vehicles, machinery, tools and equipment so that they do not endanger workers - manufacturers' operating manuals and instructions available where required by regulation, and - adequate written measures and procedures where required by regulation.
Ergonomic issues	See Asbestos Removal Operations (all Types)
Falls between levels and slips and falls	Strict enforcement of O. Reg. 213/91 (Construction Projects) fall protection requirements, including prosecution of workplace parties where warranted. Special enforcement blitz February and March 2013. Referrals to IHSA and WHSC educational programs and industry outreach.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Formwork design, build and inspection	Focused inspections of forming operations and basement construction. Referrals to IHSA educational programs, Low-rise Forming Best Practices and industry outreach.
Ladders, safe use and access/egress	Check for appropriate and safe use of job-built and manufactured ladders with focused, rigorous enforcement of O. Reg. 213/91 (Construction Projects). Special enforcement blitz February and March 2013.
Noise	Check adequacy of hearing protection as necessary to protect workers from exposures to excess noise (O. Reg. 213/91 s. 21). Referrals to IHSA, WHSC, and WSIB educational programs and industry outreach.
Occupational diseases	During inspections involving asbestos, other designated substances or toxic substances, inspectors should focus on checking: • compliance with O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) with a particular focus on Type 3 operations • that adequate measures and procedures are in place to control worker exposure, and • that adequate personal protective equipment is used, e.g., glasses, face shields, appropriate respirators with special focus on hearing protection when operating noisy equipment. If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained. At a building under construction where internal combustion engines are operating indoors and/or where fuel-burning heaters or devices are used in an enclosed space, check that: • the workplace is adequately ventilated, and • employers maintain their equipment in good operating condition.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
	Referrals to IHSA and WHSC educational programs and industry outreach.
Exposure to hazardous chemicals and substances	If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained. Referrals to IHSA educational programs and industry outreach.

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Roads

Health and safety characteristics

The “road” construction sector includes heavy civil works or infrastructure works. It has three sub-sectors:

- highway and road construction (both new construction and the rehabilitation of existing highways and roads)
- bridge construction, and
- asphalt paving.

Total road construction (all types)	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	276	266	272	252	258	1,324
Total road construction (all types)	2006	2007	2008	2009	2010	5-year average ²⁸
Lost-time injury rate per 100 full-time workers	1.67	1.50	1.45	1.32	1.31	1.44

STATISTICS ARE COMPILED BY CALENDAR YEAR

The 258 LTI claims in 2010 cost the total amount of \$1,245,277.

The four most costly injuries in descending order were:

- overexertion (\$243,971)
- struck by object (\$222,404)
- bodily reaction (\$153,722) , and
- fall to lower level (\$133,961)

50 critical injuries and nine fatalities were reported to the MOL for the “road” construction sector during the period from 2007 to 2011.

Details of the CHSP activities, events and injuries reported for the three “road” sub-sectors are presented in the tables below.

²⁸ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Highway and road construction

Trend analysis						
Highway and road construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		2,347	2,513	2,969	3,241	1,400
Program activities		2007	2008	2009	2010	2011
Proactive visits ²⁹		797	759	964	831	677
" inspections		770	732	941	802	645
" consultations		27	27	23	29	32
" investigations ³⁰		189	208	204	306	263
Orders issued		1,449	1,264	1,434	1,589	1,335
Events and injuries		2007	2008	2009	2010	2011
Complaints		68	86	90	134	100
Work refusals		1	1	1	0	1
Fatalities		2	1	0	1	1
Critical injuries		6	10	7	4	10
Other incidents		42	46	42	32	22

Top hazard-based orders – Highway and road construction:

- Constructor duties (general)
- Traffic protection plan
- Powers of Inspector
- Personal protective equipment

37 critical injuries and five fatalities were reported to the MOL for the “highway and road” sub-sector during the period from 2007 to 2011.

²⁹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

³⁰ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Bridge construction

In 2010, the CHSP began tracking the injury and illness profile for bridge construction because of the large infusion of government-funded projects that resulted in increased activity of the building of new bridges and the remediation of existing bridges.

Details about the MOL's field activity at bridge work projects presented in the table below.

Trend analysis						
Bridge construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		543	545	352	276	154
Program activities		2007	2008	2009	2010	2011
Proactive visits ³¹		294	336	213	129	87
" inspections		294	327	208	125	84
" consultations		0	9	5	4	3
" investigations ³²		104	62	31	19	26
Orders issued		546	666	298	188	159
Events and injuries		2007	2008	2009	2010	2011
Complaints		14	19	12	10	11
Work refusals		0	0	0	0	0
Fatalities		0	0	1	0	1
Critical injuries		2	1	0	0	2
Other incidents		9	10	7	1	1

Five critical injuries and two fatalities were reported to the MOL during the period from 2007 to 2011.

³¹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

³² Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Asphalt paving

In 2010, the CHSP began tracking the injury and illness profile for asphalt paving (a sub-sector of road construction) because of the large infusion of federal government spending for infrastructure renewal.

Asphalt paving	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	65	55	59	51	54	284
Asphalt paving	2006	2007	2008	2009	2010	5-year average ³³
Lost-time injury rate per 100 full-time workers	2.73	2.10	2.12	1.88	2.40	2.23

The 54 LTI claims in 2010 amount to \$260,423.

The five most costly injuries in descending order were:

- struck by object (\$63,042)
- bodily reaction (\$53,854)
- overexertion (\$50,515)
- fall to lower level (\$42,302)
- pedestrian, non-passenger struck by vehicle (\$14,135)

Eight critical injuries and two fatalities were reported to the MOL during the period from 2007 to 2011.

Further details about the CHSP activities, events and injuries reported for the asphalt sub-sector of the road sector are presented in the table below.

³³ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Asphalt paving

Trend analysis						
Asphalt paving						
Sector size		2007	2008	2009	2010	2011
Registered projects		1,216	1,245	1,370	1,352	351
Program activities		2007	2008	2009	2010	2011
Proactive visits ³⁴		255	172	221	157	141
" inspections		249	161	212	150	238
" consultations		6	11	9	7	3
" investigations ³⁵		71	66	74	74	79
Orders issued		580	382	403	308	334
Events and injuries		2007	2008	2009	2010	2011
Complaints		29	29	38	38	45
Work refusals		0	0	0	0	0
Fatalities		0	1	1	0	0
Critical injuries		2	3	1	2	0
Other incidents		19	11	8	10	7

Top hazard-based orders – Asphalt paving:

- personal protective equipment
- constructor duties (general)
- traffic protection plan
- traffic barriers for worker protection

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 focus on specific sector and workplace hazards. They will also continue to check 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.

³⁴ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

³⁵ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents
Construction

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the roads sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Electrical hazards	Routine inspections including ESA partnering during investigations
Equipment, all types	Inspections of heavy and light equipment, focusing on: - adequate training - maintenance of vehicles, machinery, tools and equipment so that they do not endanger workers - manufacturers' operating manuals and instructions available where required by regulation, and - adequate written measures and procedures where required by regulation
Ergonomic issues	See Asbestos Removal Operations (all Types)
Falls between levels and slips and falls	Strict enforcement of O. Reg. 213/91 (Construction Projects) fall protection requirements, including prosecution of workplace parties where warranted. Special enforcement blitz, February and March 2013. Referrals to IHSA and WHSC educational programs and industry outreach.
Noise	Check adequacy of hearing protection as necessary to protect a worker from exposures to excess noise (O. Reg. 213/91 s 21).
Occupational diseases	During inspections involving asbestos, other designated substances or toxic substances, inspectors should focus on checking: - compliance with O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) with a particular focus on Type 3 operations - that adequate measures and procedures are in place to control worker exposure, and - that adequate personal protective equipment is used e.g., glasses, face shields, appropriate respirators (and special focus on hearing protection when operating noisy equipment). If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
	At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained. At a structure under construction where internal combustion engines are operating indoors and where fuel-burning heaters or devices are used in an enclosed space, check that: • the workplace is adequately ventilated, and • employers maintain their equipment in good operating condition.
Exposure to hazardous chemicals and substances	If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained.
Traffic protection plan and traffic barriers	Inspectors will check that the requirements of Ontario Regulation 213/91 (Construction Projects), in particular sections 67-69.1. Note: Constructor duties under OHSA will also be strictly enforced.

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Utilities

Health and safety characteristics

The utilities sector is divided into the following six sub-sectors:

- hydro-electric (underground services)
- gas and oil pipelines
- cable
- hydro-electric power plants and above-ground power and distribution lines, transmission and electrical towers,
- water; and
- telephone service installations.

Utilities (all sub-sectors)	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	743	786	855	762	665	3,811
Utilities (all sub-sectors)	2006	2007	2008	2009	2010	5-year total ³⁶
Lost-time injury rate per 100 full-time workers	0.93	0.84	0.87	0.76	0.67	0.81

STATISTICS ARE COMPILED BY CALENDAR YEAR

In the utilities sector in 2010, there were 78 fewer LTIs than in 2006 and the LTI rate significantly decreased to 0.67 from the 2006 level of 0.93. The LTI rate decreased from the four previous years.

The 665 LTI claims in 2010 amount to \$1,652,876.

The four most costly injuries in descending order were:

- overexertion (\$315,663)
- fall to lower level (\$275,109)
- fall on same level (\$230,829), and
- repetitive motions (\$125,132),

Forty critical injuries and four fatalities in the utilities sector as a whole were reported to the MOL during the period from 2007 to 2011. Lost-time injury statistics (where available) and CHSP activities and events compiled by the MOL are reported for each of the sub-sectors in the tables below.

³⁶ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Hydro-electric (underground services)

Nine critical injuries and two fatalities have been reported to the MOL during the period from 2007 to 2011. (Lost-time injury data for this sub-sector are not available.)

Further details about the CHSP activities and events and injuries reported for the hydro-electric construction sub-sector of the utilities sector are presented in the table below.

Trend analysis						
Hydro-electric (underground)						
Sector size		2007	2008	2009	2010	2011
Registered projects		2,604	2,633	2,673	3,822	1,853
Program activities		2007	2008	2009	2010	2011
Proactive visits ³⁷		212	170	157	163	119
" inspections		210	167	154	163	118
" consultations		2	3	3	0	1
" investigations ³⁸		103	51	53	58	54
Orders issued		292	181	160	169	191
Events and injuries		2007	2008	2009	2010	2011
Complaints		10	7	12	14	15
Work refusals		0	0	0	0	0
Fatalities		1	0	0	0	1
Critical injuries		3	1	1	0	4
Other incidents		37	16	19	5	8

Top hazard-based orders – Hydro-electric (underground services):

- constructor duties (general)
- produce documents (e.g., design drawings or confined space written measures and procedures)
- traffic barriers for worker protection
- employer duties (reasonable precaution)

³⁷ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

³⁸ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Gas and oil pipelines

Gas and oil pipelines	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	24	12	24	12	9	81
Utilities (all sub-sectors)	2006	2007	2008	2009	2010	5-year total³⁹
Lost-time injury rate per 100 full-time workers	1.90	1.01	1.30	0.81	0.74	1.16

STATISTICS ARE COMPILED BY CALENDAR YEAR

In the “gas and oil pipelines” sub-sector in 2010, there were three fewer LTIs than in 2009, resulting in a reduction of the LTI rate from 0.81 to 0.74. The LTI rate decreased in the last three years.

Three critical injuries in the “utilities” sector occurred in the “gas and oil pipelines” sub-sector. No fatalities were reported to the MOL during the period from 2007 to 2011 in this sub-sector.

Further details about the CHSP activities and events and injuries reported for the gas and oil pipelines construction sub-sector of the utilities sector are presented in the table below.

³⁹ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Gas and oil pipelines

Trend analysis						
Gas and oil pipelines						
Sector size		2007	2008	2009	2010	2011
Registered projects		692	712	664	677	383
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁴⁰		76	85	86	58	51
" inspections		73	85	84	51	51
" consultations		3	0	2	7	0
" investigations ⁴¹		16	19	53	14	22
Orders issued		86	90	49	58	74
Events and injuries						
Complaints		2	8	4	5	9
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		1	0	0	0	2
Other incidents		5	6	7	1	5

Top hazard-based orders – Gas and oil pipelines:

- locates
- personal protective equipment
- equipment use
- fencing
- excavation support systems

⁴⁰ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁴¹ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Cable

Two critical injuries and one fatality were reported to the MOL during the period from 2007 to 2011. (Lost-time injury data for this sub-sector are not available.)

Further details about the CHSP activities and events and injuries reported for the cable construction sub-sector of the utilities sector are presented in the table below.

Trend analysis						
Cable						
Sector size		2007	2008	2009	2010	2011
Registered projects		278	286	243	248	136
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁴²		29	34	21	22	27
" inspections		29	34	21	22	27
" consultations		0	0	0	0	0
" investigations ⁴³		56	18	22	15	20
Orders issued		192	73	53	56	52
Events and injuries		2007	2008	2009	2010	2011
Complaints		4	2	5	7	10
Work refusals		0	0	0	0	0
Fatalities		1	0	0	0	0
Critical injuries		1	1	0	0	0
Other incidents		7	9	9	0	1

⁴² Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁴³ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Hydro-electric power plants, above-ground power and distribution lines, transmission and electrical towers

Twenty critical injuries and no fatalities were reported to the MOL during the period from 2007 to 2011. (Lost-time injury data for this sub-sector are not available.)

Trend analysis						
Hydroelectric power plants & related electrical distribution & transmission						
Sector size		2007	2008	2009	2010	2011
Registered projects		843	816	894	905	518
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁴⁴		230	192	171	142	123
" inspections		229	191	159	139	118
" consultations		1	1	12	3	5
" investigations ⁴⁵		56	131	139	97	61
" Orders issued		265	306	244	262	325
Events and injuries		2007	2008	2009	2010	2011
Complaints		12	31	27	25	21
Work Refusals		1	2	0	0	0
Fatalities		0	0	0	0	0
Critical Injuries		2	8	3	2	5
Other incidents		13	18	30	13	12

Top hazard-based orders – Hydro-electric power plants, above-ground power and distribution lines, transmission and electrical towers:

- fall protection
- traffic protection
- personal protective equipment
- access and egress
- material storage

⁴⁴ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁴⁵ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Telephone service installations

Six critical injuries and one fatality were reported to the MOL during the period from 2007 to 2011. (Lost-time injury data for this sub-sector are not available.)

Trend analysis						
Telephone service installations						
Sector size		2007	2008	2009	2010	2011
Registered projects		243	235	263	270	120
Proactive visits ⁴⁶		30	31	37	27	17
" inspections		30	31	36	27	17
" consultations		0	0	1	0	0
" investigations ⁴⁷		13	21	23	16	20
Orders issued		57	71	55	23	62
Events and injuries		2007	2008	2009	2010	2011
Complaints		3	5	7	6	11
Work refusals		0	0	0	0	0
Fatalities		1	0	0	0	0
Critical injuries		1	1	0	2	2
Other incidents		4	5	7	2	1

Top hazard-based orders – Telephone service installations:

- personal protective equipment
- excavation support systems
- traffic protection
- access and egress
- emergency procedures

⁴⁶ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁴⁷ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the utilities sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Confined space entry	Inspectors will enforce the confined space requirements in O. Reg. 632/05, including but not limited to checking that: - the constructor prepares a co-ordination document, and - the employer prepares a written program and adequate hazard assessment and that an adequate written plan is developed and is in place at the project. Inspectors will also check that: - workers are adequately trained - entry permits are issued before a worker enters a confined space, and - adequate rescue procedures, personal protective equipment (PPE) and other required forms of protection are in place.
Electrical hazards, power line contacts	Routine proactive inspections, including ESA partnering during investigations.
Emergency procedures	Strict enforcement of sections 17 and 18 of Ontario Regulation 213/91 (Construction Projects).
Ergonomic hazards, moving of equipment and materials, overturning of equipment	Inspectors will focus on MSD hazards especially lifting and overexertion that cause back injuries and worker training and encourage employer to contact the IHSA for developing specific MSD profiles.
Falls into excavation, trenches	Rigorous enforcement of O. Reg. 213/91 (Construction Projects) requirements and referrals to IHSA educational programs and industry outreach
Noise	Ensure adequate hearing protection as necessary to protect a worker from exposures to excess noise (O. Reg. 213/91 s. 21).

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Occupational diseases	During inspections involving asbestos, other designated substances or toxic substances, inspectors should focus on checking: • compliance with O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) with a particular focus on Type 3 operations • that adequate measures and procedures are in place to control worker exposure, and • that adequate personal protective equipment is used e.g., glasses, face shields, appropriate respirators with special focus on hearing protection when operating noisy equipment. If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained. At an underground structure or facility under construction where internal combustion engines are operating indoors and where fuel fired heating devices are used in an enclosed space, check that: • the workplace is adequately ventilated, and • employers maintain their equipment in good operating condition.
Exposure to hazardous chemicals and substances	If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections check that: • adequate measures and procedures are in place to control worker exposure

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
	- adequate personal protective equipment is used, and - workers are adequately trained.
Excavation support systems	Strict enforcement of Ontario Regulation 213/91 (Construction Projects, especially Part III (Excavations))

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Underground

Health and safety characteristics

The underground sector is divided into the following eight sub-sectors:

- Sewer and water main construction
- Trenching
- Caisson construction
- Cofferdam construction
- Water well drilling
- Excavation/shaft construction
- Tunnelling, and
- Subway and railway construction.

Underground (all sub-sectors)

Underground (all sub-sectors)	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	301	327	324	239	220	1,411
Underground (all sub-sectors)	2006	2007	2008	2009	2010	5-year average ⁴⁸
Lost-time injury rate per 100 full-time workers	2.12	2.15	2.02	1.53	1.52	1.87

STATISTICS ARE COMPILED BY CALENDAR YEAR

The four most costly injuries in descending order were:

- Struck by object (\$191,283)
- Overexertion (\$155,250)
- Fall to lower level (\$112,418), and
- Fall on same level (\$104,935)

Lost-time injury statistics (where available) and CHSP activities and events compiled by the MOL are reported for each of the sub-sectors in the tables below.

⁴⁸ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Sewer and water main construction

Sewer and water main	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	112	110	105	76	67	470
Sewer and water main	2006	2007	2008	2009	2010	5-year average ⁴⁹
Lost-time injury rate per 100 full-time workers	2.50	2.46	2.32	1.66	1.44	2.07

STATISTICS ARE COMPILED BY CALENDAR YEAR

Further details about the CHSP activities and events and injuries reported for the sewer and water main sub-sector of the underground sector are presented in the table below.

⁴⁹ The 5-year average is calculated from the actual 5 years LTI and FTE counts.

Sewer and water main construction

Trend analysis						
Sewer and water main construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		3,754	3,584	3,772	3,765	2,211
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁵⁰		1,124	904	1,091	831	629
" inspections		1,115	897	1,077	817	624
" consultations		9	7	14	14	5
" investigations ⁵¹		281	246	309	298	256
Orders issued		2,173	1,527	1,478	1,667	1,238
Events and injuries		2007	2008	2009	2010	2011
Complaints		101	93	88	120	109
Work refusals		0	0	0	0	0
Fatalities		0	1	1	1	1
Critical injuries		8	2	8	5	10
Other incidents		54	48	47	24	29

Top hazard-based orders – Sewer and water main construction:

- excavation support system
- fall protection
- personal protective equipment
- traffic protection
- roll over protection structure

⁵⁰ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁵¹ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Trenching

Four critical injuries and no fatalities were reported to the MOL from 2007 to 2011. (Lost-time injury data for this sub-sector are not available.)

Trend analysis						
Trenching						
Sector size		2007	2008	2009	2010	2011
Registered projects		697	730	732	633	572
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁵²		168	180	165	64	33
" inspections		165	178	164	64	33
" consultations		3	2	1	0	0
" investigations ⁵³		69	31	53	28	25
Orders issued		420	291	203	149	90
Events and injuries		2007	2008	2009	2010	2011
Complaints		26	16	17	11	6
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		1	0	0	0	3
Other incidents		9	4	14	2	0

Top hazard-based orders – Trenching:

- excavation support system
- personal protective equipment
- locates
- access and egress
- fall protection

⁵² Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁵³ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Caisson construction

Caisson construction	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	9	6	14	7	12	48
Caisson construction	2006	2007	2008	2009	2010	5-year average ⁵⁴
Lost-time injury rate per 100 full-time workers	2.08	1.15	2.51	1.33	2.01	1.82

STATISTICS ARE COMPILED BY CALENDAR YEAR

Details of the CHSP activities and events and injuries reported for the caisson sub-sector (part of the underground sector) are presented in the table below.

⁵⁴ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Caisson construction

Trend analysis						
Caisson construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		137	131	153	153	68
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁵⁵		29	35	43	30	28
" inspections		27	35	43	30	28
" consultations		2	0	0	0	0
" investigations ⁵⁶		9	5	4	8	8
Orders issued		33	56	43	33	28
Events and injuries		2007	2008	2009	2010	2011
Complaints		2	0	1	1	2
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	1	1	0	0
Other incidents		1	0	0	2	1

Top hazard-based orders – Caisson construction:

- scaffolding
- fall protection
- access and egress
- electrical hazards
- emergency procedures

⁵⁵ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁵⁶ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Cofferdam construction

Three critical injuries and zero fatalities were reported to the MOL from 2007 to 2011. (Lost-time injury data for this sub-sector are not available.)

Details of the CHSP activities and events and injuries reported for the “cofferdam” sub-sector of the underground sector are presented in the table below.

Trend analysis						
Cofferdam construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		50	51	40	34	20
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁵⁷		32	23	25	8	6
" inspections		32	23	25	8	6
" consultations		0	0	0	0	0
" investigations ⁵⁸		6	13	20	1	6
Orders issued		46	68	35	7	7
Events and injuries		2007	2008	2009	2010	2011
Complaints		1	2	0	1	0
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		2	1	0	0	0
Other incidents		0	6	2	0	1

Top hazard-based orders – Cofferdam construction:

- fall protection
- electrical hazards
- scaffolding
- equipment use

⁵⁷ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁵⁸ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Water-well drilling

Water-well drilling	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	18	14	16	8	6	62
Water-well drilling	2006	2007	2008	2009	2010	5-year average ⁵⁹
Lost-time injury rate per 100 full-time workers	4.29	3.33	3.54	2.04	2.38	3.20

STATISTICS ARE COMPILED BY CALENDAR YEAR

Details of the CHSP activities and events and injuries reported for the “water-well drilling” sub-sector of the underground sector are presented in the table below.

⁵⁹ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Water-well drilling

Trend analysis						
Water-well drilling						
Sector size		2007	2008	2009	2010	2011
Registered projects		85	89	108	84	58
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁶⁰		34	26	19	12	18
" inspections		34	26	19	12	18
" consultations		0	0	0	0	0
" investigations ⁶¹		5	4	6	3	8
Orders issued		39	63	42	26	53
Events and injuries		2007	2008	2009	2010	2011
Complaints		1	0	3	0	1
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		1	0	0	1	0
Other incidents		0	2	0	0	1

Top hazard-based orders – Water-well drilling:

- lifting devices
- electrical hazards
- access and egress
- emergency procedures
- equipment use

⁶⁰ Proactive visits are those made under the Safe At Work Ontario strategy, and include inspections and consultations

⁶¹ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Excavation, grading and construction/shaft construction

Excavation, grading and construction/shaft construction	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	133	146	160	118	107	664
Excavation, grading and construction/shaft construction	2006	2007	2008	2009	2010	5-year average ⁶²
Lost-time injury rate per 100 full-time workers	1.82	1.84	1.85	1.49	1.68	1.74

STATISTICS ARE COMPILED BY CALENDAR YEAR

In the “excavation grading and construction/shaft construction” sub-sector in 2010, there were 53 fewer LTIs than in 2008 resulting in a reduction of the LTI rate from 1.85 to 1.68. Both the number of LTIs and the LTI rate decreased from the three previous years.

Eight critical injuries and five fatalities were reported to the MOL from 2007 to 2011.

Further details about the CHSP activities and events and injuries reported for the “excavation grading and construction/shaft construction” sub-sector of the underground sector are presented in the table below.

⁶² The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Excavation, grading and construction /shaft construction

Trend analysis						
Excavation, grading and construction /shaft construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		1,806	1,893	1,920	2,100	1,023
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁶³		594	425	419	319	340
" inspections		584	416	409	316	329
" consultations		10	9	10	3	11
" investigations ⁶⁴		192	162	148	137	194
Orders issued		1,066	763	652	548	604
Events and injuries		2007	2008	2009	2010	2011
Complaints		59	55	51	62	67
Work refusals		0	0	0	1	0
Fatalities		1	1	1	0	2
Critical injuries		2	0	1	2	3
Other incidents		40	26	27	17	9

Top hazard-based orders – Excavation, grading and construction/shaft construction:

- excavation support systems
- personal protective equipment
- fall protection
- locates
- traffic protection

⁶³ Proactive visits are those made under the Safe At Work Ontario strategy, and include inspections and consultations

⁶⁴ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Tunnelling

Three fatalities and no critical injuries were reported to the MOL from 2007 to 2011. (Lost-time injury data are not available for this sub-sector.)

Further details about the CHSP activities and events and injuries reported for the tunnelling sub-sector of the underground sector are presented in the table below.

Trend analysis						
Tunnelling						
Sector size		2007	2008	2009	2010	2011
Registered projects		250	256	241	272	180
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁶⁵		86	50	99	59	21
" inspections		85	49	99	58	21
" consultations		1	1	0	1	0
" investigations ⁶⁶		31	13	27	25	40
Orders issued		159	73	134	69	55
Events and injuries		2007	2008	2009	2010	2011
Complaints		7	0	4	9	12
Work refusals		0	0	0	0	0
Fatalities		0	0	1	0	2
Critical injuries		0	0	0	0	0
Other incidents		6	5	7	1	7

Top hazard-based orders – Tunnelling:

- personal protective equipment
- fire protection equipment
- crane operation
- design drawings
- equipment operation

⁶⁵ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁶⁶ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents
Construction

Subway and railway construction

Subway and railway	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	29	51	29	30	28	167
Subway and railway	2006	2007	2008	2009	2010	5-year average ⁶⁷
Lost-time injury rate per 100 full-time workers	1.88	2.72	1.53	1.35	1.10	1.65

STATISTICS ARE COMPILED BY CALENDAR YEAR

In the “subway and railway” sub-sector in 2010, there was two less LTI than in 2009; however the LTI rate decreased from 1.35 to 1.10 owing to a slight increase in employment in 2010.

No fatalities or critical injuries were reported to the MOL from 2007 to 2011 in this sub-sector.

Further details about the CHSP activities and events and injuries reported for the subway construction sub-sector of the underground sector are presented in the table below.

⁶⁷ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Subway and railway construction

Trend analysis						
Subway and railway construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		70	70	66	95	42
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁶⁸		24	11	18	6	26
" inspections		24	10	18	6	23
" consultations		0	1	0	0	3
" investigations ⁶⁹		0	4	3	9	14
Orders issued		53	14	45	18	95
Events and injuries		2007	2008	2009	2010	2011
Complaints		0	2	1	0	1
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		0	0	1	2	1

Top hazard-based orders – Subway and railway construction:

- fall protection
- access and egress
- equipment operation
- personal protective equipment
- excavation support system

⁶⁸ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁶⁹ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the underground sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Confined space entry	Inspectors will enforce the confined space requirements in O. Reg. 632/05 (Confined Spaces) including but not limited to checking that: - the constructor prepares a co-ordination document, and - the employer prepares a written program and adequate hazard assessment and that an adequate written plan is developed and is in place at the project. Inspectors will also check that: - workers are adequately trained - entry permits are issued before a worker enters a confined space, and - adequate rescue procedures, personal protective equipment and other required forms of protection are in place.
Electrical hazards, power line contacts	Routine proactive inspections, including ESA partnering during investigations.
Equipment, all types	Inspections of heavy and light equipment, focusing on: - adequate training - maintenance of vehicles, machinery, tools and equipment so that they do not endanger workers - manufacturers' operating manuals and instructions available where required by regulation, and - adequate written measures and procedures where required by regulation.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Ergonomic hazards, moving of equipment and materials, overturning of equipment	Inspectors will focus on MSD hazards especially lifting and overexertion that cause back injuries and worker training and encourage employer to contact the IHSA for developing specific MSD profiles.
Falls into excavation, trenches	Rigorous enforcement of O. Reg. 213/91 (Construction Projects) requirements and referrals to IHSA educational programs and industry outreach
Noise	Check adequacy of hearing protection as necessary to protect a worker from exposures to excess noise (O. Reg. 213/91 s. 21).
Occupational diseases	During inspections involving asbestos, other designated substances or toxic substances, inspectors should focus on checking: • compliance with O. Reg. 278/05 (Asbestos on Construction Projects and in Buildings and Repair Operations) with a particular focus on Type 3 operations • that adequate measures and procedures are in place to control worker exposure, and • that adequate personal protective equipment is used e.g., glasses, face shields, appropriate respirators with special focus on hearing protection when operating noisy equipment. If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained. At an underground structure or facility under construction where internal combustion engines are operating indoors and where fuel-burning heaters or devices are used in an enclosed space, check that: • the workplace is adequately ventilated, and • employers maintain their equipment in good operating condition.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Exposure to hazardous chemicals and substances	If controlled products are used at a project, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained.

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Window cleaning

MOL construction inspectors enforce the OHSA and Regulation 859 at workplaces where window cleaning is taking place across the province.

Health and safety characteristics

This sector consists of window cleaning services for buildings and the cleaning of windows where a worker may fall a vertical distance of three metres or more.

Window cleaning services	2006	2007	2008	2009	2010	5-year total
Lost-time injuries	21	13	27	24	15	100
Window cleaning services	2006	2007	2008	2009	2010	5-year total ⁷⁰
Lost-time injury rate per 100 full-time workers	3.78	2.17	4.38	3.77	3.07	3.45

STATISTICS ARE COMPILED BY CALENDAR YEAR

In the “window cleaning” sector in 2010, there were nine fewer LTIs than in 2009, with a reduction of the LTI rate from 3.77 to 3.07.

The 15 LTI claims in 2010 amount to \$44,868.

The four most costly injuries in descending order were:

- bodily reaction and exertion, N.E.C. (\$26,098)
- struck against object (\$9,861)
- overexertion (\$2,761), and
- fall to lower level (\$1,827).

Two critical injuries and no fatalities were reported to the MOL from 2007 to 2011.

Details of the CHSP activities and events and injuries reported for the window cleaning sector are presented in the table below.

⁷⁰ The 5-year average is calculated from the actual 5 years LTI and FTE counts.
Construction

Window cleaning

Trend analysis						
Window cleaning						
Sector size		2007	2008	2009	2010	2011
Registered premises		2,746	2,955	2,805	3,527	758
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁷¹		103	86	100	284	149
" inspections		102	85	100	272	144
" consultations		1	1	0	12	5
" investigations ⁷²		39	29	17	23	39
Orders issued		199	159	108	303	154
Events and injuries		2007	2008	2009	2010	2011
Complaints		15	16	11	15	16
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	1	0	1
Other incidents		5	1	1	3	2

Top hazard-based orders – Window cleaning:

- anchor inspection
- roof plan
- engineering review
- material storage
- WHMIS

⁷¹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁷² Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the window cleaning sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Electrical hazards, power line contacts	Routine proactive inspections, including ESA partnering during investigations.
Equipment, all types, including suspended access equipment such as swing stages, "spiders" and boatswain's chairs	Inspections of heavy and light equipment, focusing on: - adequate training - inspection records by professional engineers where required - maintenance of vehicles, machinery, tools and equipment so that they do not endanger workers - manufacturers' operating manuals and instructions available where required by regulation, and - adequate written measures and procedures where required by regulation.
Ergonomic hazards, moving of equipment and materials, reaching, use of hand tools and suspended access equipment	Routine inspections.
Falls between levels, heights and slips and falls	Routine inspections. Strict enforcement of requirements and referrals to IHSA educational programs and industry outreach.
Noise	Check adequacy of hearing protection as necessary to protect a worker from exposures to excess noise (O. Reg. 213/91, s. 21)
Occupational illness and disease	Where a worker may be exposed to hazardous substances or biological agents (e.g., mould, histoplasma, water-borne pathogens, etc.), MOL inspectors will check that: adequate measures and procedures are in place to control worker exposure

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
	- adequate personal protective equipment is used, and - workers are adequately trained.
Exposure to hazardous chemicals and substances	If controlled products are used at a workplace, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up-to-date, the program of worker education at the workplace, and worker training. During inspections, check that: - adequate measures and procedures are in place to control worker exposure - adequate personal protective equipment is used, and - workers are adequately trained.
Housekeeping, material handling and storage Access and egress	During workplace visits, inspectors will focus on specific activities and enforce the requirements of the construction regulations under sections: 35, 37(1), 70 (1), 72(a), and 93(1) dealing with housekeeping and material handling hazards due to poor housekeeping, obstruction to access and egress and material storing and lifting and maintenance of vehicles, machinery, tools and equipment that may lead to increased physical demand and working from awkward postures while carrying. Attention to worker training, provision and maintenance of equipment, written measures and procedures and supervision for proper material lifting or pushing and pulling.
Suspension system and fall protection	Inspectors will check for compliance with R.R.O. 1990, Reg. 859, especially: - anchors, suspension equipment and components of the suspension system - work plan - requirement that an engineer design certain window cleaning systems. Strict enforcement of O. Reg. 213/91 (Construction Projects) fall protection requirements, including initiating prosecution of workplace parties where warranted

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca. and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Other construction

Health and safety characteristics

This sector includes the moving of buildings and structures, and projects not elsewhere classified.

Nine critical injuries and no fatalities were reported to the MOL from 2007 to 2011.

Further details about the CHSP activities and events and injuries reported for this sector are presented in the table below.

Other construction not elsewhere classified

Trend analysis						
Other construction not elsewhere classified						
Sector size		2007	2008	2009	2010	2011
Registered projects		10,777	10,773	10,751	10,799	10,662
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁷³		119	91	36	43	74
" inspections		113	77	36	37	63
" consultations		6	14	0	6	11
" investigations ⁷⁴		53	40	17	29	49
Orders issued		328	215	82	116	245
Events and injuries		2007	2008	2009	2010	2011
Complaints		6	9	6	18	18
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		2	1	1	2	3
Other incidents		7	3	3	2	5

STATISTICS ARE COMPILED BY CALENDAR YEAR

Top hazards orders – Other construction not elsewhere classified:

- personal protective equipment
- fall protection

⁷³ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁷⁴ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

- fire protection
- locates
- access and egress

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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the other construction sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Confined space entry, excavation construction and drowning	Inspectors will enforce the confined spaces requirements in O. Reg. 632/05, including but not limited to checking that: • the constructor prepares a co-ordination document, and • the employer prepares a written program and adequate hazard assessment and that an adequate written plan is developed and is in place at the project. Inspectors will also check that: • workers are adequately trained • entry permits are issued before a worker enters a confined space, and • adequate rescue procedures, personal protective equipment and other forms of protection are in place. • additional regulatory requirements also will be routinely audited.
Electrical hazards	Routine proactive inspections, including ESA partnering during investigations.
Ergonomic issues and initiatives, including moving of equipment and materials	Routine inspections and enforcement of O. Reg. 213/91, especially the safe use of cranes and other material-handling and lifting devices.
Soil instability in excavations, trenches	Routine inspections. Strict enforcement of shoring requirements and referrals to IHSA educational programs and industry outreach.

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Occupational diseases	At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained.
Exposure to hazardous chemicals and substances	Where controlled products are used, check compliance with O. Reg. 860 (Workplace Hazardous Materials Information System) with particular emphasis on reviewing: supplier material safety data sheets to check that they are up to date, the program of worker education at the workplace, and worker training. At projects where a worker may be exposed to designated substances such as lead, silica, etc., and other hazardous substances such as mould, man-made vitreous fibres, polychlorinated biphenyls, “brownfield” contaminated work sites, during inspections, check that: • adequate measures and procedures are in place to control worker exposure • adequate personal protective equipment is used, and • workers are adequately trained.
Traffic protection	Routine inspections, especially the traffic control requirements in O. Reg. 213/91

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Diving

MOL diving inspectors enforce the OHSA and O. Reg. 629/94 to certain diving operations that take place across the province.

Health and safety characteristics

Diving operations include underwater inspection, investigation, excavation, construction, alteration, repair or maintenance of equipment, machinery, structures or ships, scientific research, aquaculture support, disposal of unexploded devices, environmental (abatement of spills) and the salvage of sunken property.

The diving sector is divided into six sub-sectors:

- Diving construction and salvage
- Diving environmental (scientific research, fish farms, remediation of spills)
- Diving at industrial establishments
- Diving at offshore oil and gas fields (mining)
- Emergency services (police duties, unexploded ordnance [UXO] disposal)
- Shipbuilding and repairs.

Further details about the CHSP activities and events and injuries reported for each of the six sub-sectors of the diving sector are presented in the tables below. Lost-time injury data are not available for the diving sector and sub-sectors.

Diving construction

Trend analysis						
Diving construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		243	197	331	227	89
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁷⁵		91	96	48	71	68
" inspections		89	95	48	70	66
" consultations		2	1	0	1	2
" investigations ⁷⁶		0	1	1	0	5
Orders issued		55	0	17	39	40
Events and injuries		2007	2008	2009	2010	2011
Complaints		0	0	1	0	1
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		0	1	0	0	1

STATISTICS ARE COMPILED BY CALENDAR YEAR

Top hazard-based orders – Diving Construction:

- diving supervisor
- diving personnel
- crane or other hoisting device
- dive site equipment
- hydrostatic testing

⁷⁵ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁷⁶ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Diving environmental

Trend analysis						
Diving environmental						
Sector size		2007	2008	2009	2010	2011
Registered projects		71	84	63	78	42
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁷⁷		23	21	4	8	18
" inspections		21	17	2	8	18
" consultations		2	4	2	0	0
" investigations ⁷⁸		0	2	2	0	0
Orders issued		12	0	0	0	19
Events and injuries		2007	2008	2009	2010	2011
Complaints		0	0	0	0	0
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		0	1	4	0	0

Top hazard-based orders – Diving environmental:

- diving supervisor
- diving personnel
- medical requirements
- contingency plan
- operational plan

⁷⁷ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁷⁸ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Diving at industrial establishments

Trend analysis						
Diving at industrial establishments						
Sector size		2007	2008	2009	2010	2011
Registered projects		891	949	825	950	340
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁷⁹		217	166	107	130	59
" inspections		207	151	95	127	58
" consultations		10	15	12	3	1
" investigations ⁸⁰		5	7	6	5	5
Orders issued		73	0	27	42	14
Events and injuries		2007	2008	2009	2010	2011
Complaints		0	2	2	0	3
Work refusals		0	0	0	0	0
Fatalities		0	0	1	0	0
Critical injuries		1	0	0	0	0
Other incidents		0	3	6	0	2

Top hazard-based orders – Diving at industrial establishments:

- hydrostatic testing
- standby diver ready to rescue
- diving tender
- equipment
- proper notification

⁷⁹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁸⁰ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents
Construction

Diving at mining projects and pits and quarries

Trend analysis						
Diving at mining projects and pits and quarries						
Sector size		2007	2008	2009	2010	2011
Registered projects		13	15	12	10	N/A
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁸¹		4	17	2	6	0
" inspections		4	17	1	6	0
" consultations		0	0	1	0	0
" investigations ⁸²		0	2	1	0	0
Orders issued		1	0	0	0	0
Events and injuries		2007	2008	2009	2010	2011
Complaints		0	0	0	0	0
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		0	1	1	0	0

⁸¹ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁸² Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Marine construction

Trend analysis						
Marine construction						
Sector size		2007	2008	2009	2010	2011
Registered projects		148	155	159	162	136
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁸³		35	28	24	37	60
" inspections		35	28	24	37	59
" consultations		0	0	0	0	1
" investigations ⁸⁴		5	2	7	3	9
Orders issued		71	43	32	40	92
Events and injuries		2007	2008	2009	2010	2011
Complaints		4	1	0	2	2
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	1
Other incidents		0	1	2	0	2

Top hazard-based orders – Marine construction:

- personal protective equipment
- emergency procedures
- electrical hazards
- fall protection
- lockout

⁸³ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁸⁴ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Shipbuilding and repairs

Trend analysis						
Shipbuilding and repairs						
Sector size		2007	2008	2009	2010	2011
Registered projects		35	55	61	73	55
Program activities		2007	2008	2009	2010	2011
Proactive visits ⁸⁵		6	20	11	14	15
" inspections		3	20	10	13	13
" consultations		3	0	1	1	2
" investigations ⁸⁶		2	5	7	4	3
Orders issued		4	43	15	33	12
Events and injuries		2007	2008	2009	2010	2011
Complaints		2	3	2	4	0
Work refusals		0	0	0	0	0
Fatalities		0	0	0	0	0
Critical injuries		0	0	0	0	0
Other incidents		0	0	2	0	0

Top hazard-based orders – Shipbuilding and repairs:

- electrical hazards
- fall protection
- material storage
- lighting
- scaffolding

⁸⁵ Proactive visits are those made under the *Safe At Work Ontario* strategy, and include inspections and consultations

⁸⁶ Investigations are reactive workplace visits, which include complaints, work refusals, fatalities, critical injuries and other incidents

Major hazards and Diving 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 focus on specific sector and workplace hazards. They will also continue to check 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.

The following section provides additional detail on the specific hazards, cause of injuries/illnesses and enforcement focus of the CHSP in the diving sector.

In addition to general enforcement of the OHSA and its regulations, MOL inspectors will carry out proactive visits in support of *Safe At Work Ontario* in 2012-2013.

Inspectors will use an organization's LTI injury history, field intelligence and information provided by workplace parties to inspect and pay attention to the following hazards:

Major hazards and key health and safety issues	MOL Construction Health and Safety Program inspection focus
Contaminated compressed breathing air	MOL Inspectors will continue to monitor employers' air quality control measures to check that all sources of divers' compressed breathing air are in following best practices as set out in the new CSA standard Z275.2 -11 "Occupational Safety Code for Diving Operations". The diving inspectors will be looking for evidence of a current air test certificate from an accredited laboratory, real time carbon monoxide analysis, and maintenance records.
Work around water control structures	Owners, Employers, and diving supervisors are to make sure that adequate measures and procedures are in place to ensure a diver does not encounter hazardous waterflows (e.g. "delta p force" (differential pressure)
Salvage diving operations	The MOL will continue to respond to reports from the Spills Action Centre, police services and concerned citizens of incidents involving the accidental sinking of equipment, vessels, vehicles and aircraft in order to check that owners and insurance companies are aware of the requirements of the OHSA and Diving Legislation.
Work in contaminated environments, pipeline penetrations, unexploded ordnance and general construction projects.	Routine inspections checking for evidence of competency of all persons who participate in a diving operation, as required by section 4.1 of the Regulation for Diving Operations.

Employers may obtain advice for addressing health and safety issues in this sector from the Infrastructure Health and Safety Association (IHSA): www.ihsa.ca and Workers Health and Safety Centre (WHSC) www.whsc.on.ca.

Summary and highlights

The MOL Construction Health and Safety Program Sector Plan is part of *Safe At Work Ontario*, the MOL's compliance strategy for occupational health and safety. Through proactive enforcement, *Safe At Work Ontario* provides a modern, flexible, compliance-based program.

This sector plan contains a brief description of some of the main topics that an inspector may address in the workplace. While each workplace is unique, and the circumstances presented to an inspector may result in a different inspection focus, this sector plan provides a general overview of MOL's focus within the construction, window cleaning and diving sectors and the various types of construction projects.

The CHSP will continue its enforcement focus on:

- compliance with the Occupational Health and Safety Act and its regulations
- the injury and illness performance of the construction industry's sectors and sub-sectors, and
- the major hazards and key issues associated with the nature and type of work activities involved.

In addition, the CHSP will also conduct three, province-wide, heightened enforcement campaigns (aka "blitzes") and participate in two cross-program ministry blitz in 2012-2013:

Focus	Date: 2012-13
Struck by Objects (hazards associated with traffic control during roadwork)	May 2012
New and Young Worker*	May – August 2012
Tower cranes / Mobile cranes / Hoisting hazards	June 2012
Engagement Focus in Construction supervisory responsibilities, training and requirements under Ontario Regulation 213/91 (Construction Projects), section 14	September – October 2012
Slips, Trips and Falls* (includes ladder safety and fall protection hazards across all construction sectors, sub-sectors, and trades)	February – March 2013

* Cross-Program heightened enforcement campaigns

A health and safety culture requires all workplace parties to pay constant, appropriate attention to workplace health and safety, in other words to have a functioning internal responsibility system. Sustainable workplace health and safety culture needs a strong commitment by everyone to prevent injuries and illness and to reduce risk.

For further information, contact:

- Ontario Ministry of Labour at: www.labour.gov.on.ca
- Workplace Safety and Insurance Board at: www.wsib.on.ca
- Infrastructure Health & Safety Association at: www.ihsa.ca
- Workers Health and Safety Centre at: www.whsc.on.ca
- Occupational Health Clinics for Ontario Workers www.ohcow.on.ca