

Health and Safety for Survey Field Crew Operations - "A Brief Review"

By Nigel Day, OLS, OLIP

Introduction

There are many topics to be considered when a surveying company is formulating a Health and Safety (H&S) Plan. It is difficult to condense all of the applicable issues into a brief summary. This article is intended to give survey practitioners some helpful guidelines and reference sources to assist in the preparation of a Survey Field Operations H&S Plan but it is not intended to be the only resource.

The Reminder

If you do not have a health and safety policy and plan, let's start with a powerful reminder. Section 25 (2) (h) of the *Occupational Health and Safety Act* (OHSA) states that "an employer shall take every precaution reasonable in the circumstances for the protection of a worker". This is a simple and powerful requirement and it clearly states where the ultimate responsibility lies for the safety of your staff. A policy and plan helps you take these reasonable precautions.

The Act and Regulations

The act that governs workers' health and safety in Ontario is the *Occupational Health and Safety Act* R.S.O. 1990, c. O.1. The Regulations under the Act, which are relevant to surveying practices, include those defining specific requirements for Industrial, Construction and Mining operations. The Ministry of Labour (MoL) retains the power to enforce the Act and Regulations.

Generally, surveying falls under the *Industrial Establishments Regulation* 851 and may also fall under the *Construction Projects Regulation* O. Reg 213/91 when employees are working on a construction project or on a road or highway. Traffic protection components however, are better

covered under the *Construction Projects Regulation* and sections 67-69 make reference to traffic protection requirements (MoL will look here even if you operate under the *Industrial Regulation*). The *Ontario Traffic Manual (OTM) Book 7 - Temporary Conditions* (comes in Office and Field editions) provides basic requirements for traffic control and worker protection in work zones on or adjacent to public highways including ramps and municipal roads and streets. (Information on where to obtain the Manuals can be found on the following Ontario Traffic Conference website: http://www.otc.org/otcweb2/ontario_traffic_book.html.) The *OTM Book 7 Temporary Conditions* shows how to apply traffic control devices in temporary construction zones to help ensure worker safety, motorist safety and motorist mobility. It assists workers in the field by illustrating appropriate signage required for roadway work. The Field Edition is an abbreviated version of the Office Edition.

Furthermore, surveying could fall under the *Mines and Mining Plants Regulation* 854 if employees are working in a mine and maybe even in a gravel pit or quarry.

All surveying offices are required to have copies of the *Occupational Health and Safety Act* (OHSA) and applicable Regulations in the work place. A good "hard copy" source of this information is the *Pocket Ontario OH&S Act and Regulations, Consolidated Edition* published by Carswell. The Act and corresponding Regulations can also be viewed and acquired on the Ontario Statutes and Regulations website: www.e-laws.gov.on.ca.

The Policy

In a workplace where six or more "workers" are regularly employed, an

employer shall, under Section 25 (2)(j) of the OHSA, "prepare and review at least annually a written occupational health and safety policy and develop and maintain a program to implement that policy" and under section 25 (2)(k) "post in a conspicuous location in the workplace a copy of the occupational health and safety policy". The "Policy" will be a set of statements, often several paragraphs to a page or two, expressing the company's commitment to undertaking a system promoting and ensuring as safe a workplace as possible and safe working conditions. Any documentation must satisfy the requirements in the Act and Regulations. Furthermore, it is the responsibility of the employer to train their staff and provide them with information on safe working practices. Many government offices and information centres have their Policy statements posted in public places and are available for viewing (eg. Land Registry Office). An example of a health and safety policy, reprinted from the Ministry of Labour website, is included at the end of this article.

If you believe you should not worry about a policy and plan if you have fewer than six "workers" in a workplace, then I offer you the following. An employer's duty is to ensure that the workers have a minimum coverage for health and safety, wherever they work (office or field). As stated previously, the employer shall take all reasonable precautions necessary to ensure that the health and safety of workers in the field is protected. The workplace for the field staff may vary, but the employer's responsibility for them will not. Therefore, a policy would still be prudent. An informative health and safety resource guide titled "Health and Safety for Small Business" is available from the Education Safety Assoc. of Ontario (www.esao.on.ca).

Health and Safety Representative

If the number of workers in your firm regularly exceeds five, then a Health and Safety Representative must be selected from among those who do not exercise managerial functions. The requirements of the selection process are found in section 8(5) OHS Act. The duties and responsibilities of the Representative are described in Section 8 of the Act. Although it is not mandatory for organizations with fewer than twenty people, it is recommended that the representative take a three-day Basic Certification Course and Workplace-Specific Hazard Training (Reg. 780/94 and clause 26(1)(l) Act). If one is wondering about analyzing “workplace” terminology and worker numbers, I would suggest that if you have six or more workers (field & office combined) meeting at a workplace (i.e. head office) on a regular basis, even if they are mainly field staff, then the requirement for a health and safety representative applies. Consider the intent on health and safety representation in the Act and apply it liberally. The crew or individual workers may frequent many different work sites incorporating different regulation requirements, and as such, they should have the right to have a representative to bring issues to if the need arises. Remember that the representative would be available for office workers also.

Joint Health and Safety Committee (JHSC)

Section (9) subsection (2)(a) OHS Act, states that “a joint health and safety committee is required at a workplace where twenty or more workers are regularly employed”. Under subsection (6) a committee shall consist of at least two people where fewer than fifty workers are regularly employed and four people for a workplace with more than fifty workers. At least half the committee will be workers. Unless otherwise prescribed at least one member representing the workers and at least one member representing the

“an employer shall take every precaution reasonable in the circumstances for the protection of a worker”
Occupational Health and Safety Act, Section 25(2)(h)

employer must be a certified member. This means that they are certified by the Workplace Safety and Insurance Board under the Workplace Safety and Insurance Act, 1997. A certified member must have completed the Basic Certification course and a Workplace Specific Hazard Training course (Sec 9(12) & clause 26(1)(l) OHS Act; also Reg. 780/94).

The Plan

The Plan is the detailed document that describes how the employer is going to support and perform the items committed to in the Policy. It should be clear and concise. The Plan supports the Policy and is its engine, its brains and in time of need, its helper and saviour. Prudently, it should include, but is not limited to, the following: hazard identification, worker training requirements, first-aid and rescue procedures, description of the surveying duties, responsibilities, availability and use of equipment, working protocols or procedures, traffic protection plan components and many other items. Remember that once the protocols or procedures are documented, they must be followed!

How to Commence Writing the Plan

The task of writing a Plan at first appears daunting, but if you write fifteen minutes per day, a reasonable Plan can be compiled quite quickly. I recommend that it be written as if you were providing guidance, instruction and protection to yourself or a family member. As you work through the Plan creation continually ask the following questions: “What if my crew encounters this?” or “What if this happens to a worker?” Simply imagine what actions a field crew would go through in a full day and account for all of the components. You might prudently allow the field personnel to have input

on the policy. In doing this, attempt to identify the hazards and write workplace protocols to minimize the identified risks. Holding meetings would also ensure that any possible hazards are recognized, and subsequently, that appropriate ‘reasonable’ precautions would then be taken on each worksite. ‘Reasonable’ should be defined as what is reasonable to someone who is knowledgeable in health and safety and in surveying operations.

There are two items that may help you to start the Plan: ‘Duties of Employers’ under the Act and the term ‘Due Diligence’.

Duties of Employers

The OH&S Act requires that employers take every precaution reasonable for the protection of their workers. The duties of the employers are listed in Sections 25 and 26 of the Act and include providing instruction on the use and maintenance of equipment, hazard identification, training, policy writing, etc. Creating a plan with these duties in mind will help to show that you, as an employer, have performed ‘due diligence’.

Due Diligence

‘Due Diligence’ has many meanings but in occupational health and safety it refers to the employer’s legal responsibility to take every reasonable precaution to prevent injuries and illnesses and prove that they did so. If an employer is charged with an offence under the Act (Section 66), in their defence, they must demonstrate due diligence. If the employer is found guilty and is convicted, the maximum fine for a corporation is \$500,000 and for an individual is \$25,000 or imprisonment for up to twelve months. A comprehensive Plan that provides appropriate training and utilization of safe working protocols will benefit the defence. Holding regular meetings

would also ensure that the employer and the workers know both the legislative and the company health and safety requirements. Documenting your meetings and discussions is recommended as a prudent course of action.

Hazard Identification and Control - A Key Focus

The identification and control of workplace hazards are key components of your Plan. This is also a duty under section 25(2)(d) of the Act. The identification and mitigation of hazards is paramount to a safe working environment. The following are some of the hazards or hazard categories that could be identified and reviewed:

- Traffic: cars, trucks, multilane/inter-section/interchange complexities etc.
- Explosion: gases, paint, gasoline, iron bars piercing utilities etc.
- Eye, facial, vibration and hearing injuries from: digging, pounding, drilling, sawing etc.
- Environment and weather: UV rays, sunburn, heat stroke, hypothermia, frostbite, etc.
- Biohazards: bites, stings, cuts, poison ivy, etc.
- Terrain conditions: uneven ground, swamps, steep slopes, etc.
- Confined spaces: culverts, catch basins, mines, etc.
- Working around water: rivers, lakes, ponds, ice, etc.
- Fall risks: rock cuts, bridges, foundations, structures, etc.
- Equipment operation and working around utilities (explosion + electrical) and many such other.
- Overexertion: repetitive strains, musculoskeletal injuries, back injury.
- Falling objects: protective headwear.
- Foot injuries: protective footwear (green patch).

Again, employers are encouraged to write protocols dealing with these and other anticipated hazards and to train staff to reduce or eliminate the dangers.

A field crew vehicle is considered a workplace as set out in Section 13 and thus requires a first aid kit.

Another key area to include in the Plan is identified in Section 25(2)(a). An employer shall “provide ‘**information**’, ‘**instruction**’ and ‘**supervision**’ to a worker to protect the health and safety of the worker”. An employer must have a copy of the OH&S Act and Regulations available and posted in the workplace. Also, the ‘In Case of Injury’ poster from WSIB should be displayed. Regular meetings will help to ensure your OH&S plan is understood and followed.

A Helper

An employer, without limiting the duty imposed in Section 25(1), can appoint an assistant, who could be a supervisor, in this health and safety endeavour. Section 25(2)(c) states that “when appointing a supervisor, appoint a competent person”. The definition of a “competent person” in the Act is someone who,

- a) is qualified because of knowledge, training and experience to organize work and its performance.
- b) is familiar with the OH&S Act and its Regulations that apply to the work.

- c) has knowledge of any potential or actual danger to health and safety in the workplace.

The duties of Supervisors under the Act can be found in Section 27. Remember, the supervisor must be competent when appointed.

Duties of Workers

The duties of ‘workers’ under the Act provide some further relief to employers who worry whether their employees will accept the health and safety plan. Section 28 spells out the workers’ duties, which include working in compliance with the Act and Regulations, your generated protocols or procedures and wearing personal protective equipment and such other.

The Rights of Workers

An employer has a general right to govern the workers. To balance that power, the Act gives four basic rights to the workers.

- The **right to know**; Workers have a right to know about any potential hazards to which they may be exposed and a right to be trained for their safety. The Workplace Hazardous Materials Information System (WHMIS) plays an important role in giving workers the right to know.

- The **right to participate**; Workers have the right to be part of the process of identifying and controlling workplace health and safety concerns through membership in a JH&S Committee or through H&S Representatives.

- The **right to refuse work**; Workers have the right to refuse any work that they believe is dangerous to their own health



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and safety or that of another worker, Section 43(3)(a to c). The process for refusing unsafe work and the duties of the employer in responding to the refusal can be found in Section 43(4 to 13).

The **right to stop work**; “Certified” members of a Joint Health and Safety Committee have the right to stop any work that they perceive to be dangerous to any worker. The Act sets out how the right to stop work is exercised.

WHMIS

As stated in the Workplace Hazardous Materials Information System (WHMIS) Regulation 860 (amended by O. Reg 36/93), every controlled substance is designated as a hazardous substance. There are many requirements placed on Employers in sections 5 to 25 of this regulation including the requirements to instruct and educate employees in the use or handling of a specific hazardous product. This system applies to both field and office work areas. An employer is required to identify physical, biological and chemical Workplace Hazardous materials under Part IV of the Act (Toxic Substances). Thus, an employer may need to provide Material Safety Data Sheets (MSDS) to workers and have them available for examination by the workers in the workplace.

First Aid

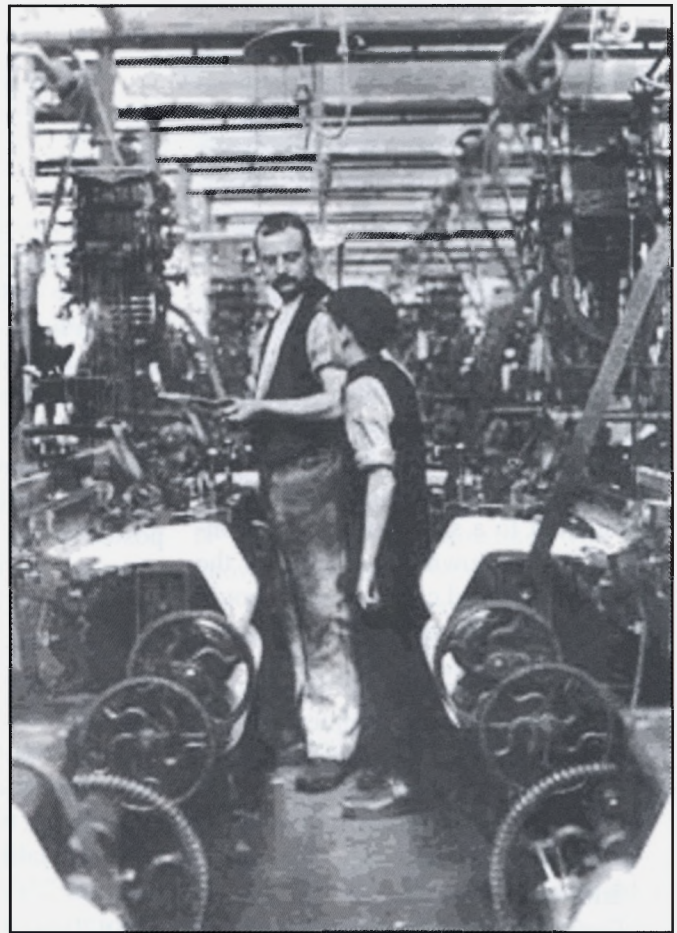
The First Aid Regulation (1101) under the Workplace Safety and Insurance Act spells out the minimum first aid and first aid kit requirements to be found in workplaces. A field crew work vehicle is considered a workplace as set out in Section 13 and thus requires a first aid kit. Section 8(2) requires that the person in charge of a first aid station or box must hold a valid first aid certificate. This may require an assessment of your first aid training needs in relation to your work operation. Remember to post the valid first aid certificates in the workplace.

Traffic Protection Plans (TPP'S)

You must understand terminology such as Traffic Control Plan (TCP) and Traffic Protection Plan (TPP). Briefly a TCP is “a detailed plan for the control of traffic during construction, maintenance or utility operations on a highway” while a TPP is defined as “a plan required by the OHSA and its regulations for the protection of workers in a work zone”. TPP's are to contain a written description of the traffic hazards to which the workers may be exposed and measures used to protect them (Book 7).

Section 67(4, 5 & 6) under the Construction Regulations requires employers to identify any vehicular hazards, provide the methods to protect the workers and to provide instructions for such traffic protection in writing. The Ontario Traffic Manual, Book 7, provides the guidance for the work site layouts, traffic protection, and equipment requirements for operations on and near live traffic lanes. Section 15 in Table 'F' (Decision Matrix in Book 7) shows the basic or minimum Typical Layout (TL) diagrams available to surveyors for the protection of the field staff working on or near a live lane. Documentation should accompany the identification of the daily TL used to fulfil the requirements of a Traffic Protection Plan as called for in Section 67(5) under the Construction Regulations.

TPP's should be reviewed and prepared prior to arriving at a work site but should be modified if the field situation is different than anticipated. Again, hazards and procedures must be documented as the employer or



supervisor must supply written instructions on the set-up and take down of traffic protection layouts to field staff. Typical Layout (TL) 73B from Book 7, will probably become a familiar traffic protection set-up depending on your work requirements, highway and location. In Book 7, survey operations are usually categorized as very short duration or short duration and this can impact your TL choices. The 'set-up' and 'take-down' times must be included in your determinations of the correct time category. It is your decision as to whether you use traffic protection inside a road or highway corridor well away from a traffic danger, but you absolutely must if you are near a live lane and your H&S plan and TPP should reflect this. It is a good idea to set-up a work zone when in a right-of-way, by the use of signs, to give notice of workers being present.

The TPP for each site, activity or project should show details of, but is not limited to, the following: location, type of work operation, duration, number of crew members, weather,

... a TPP is defined as “a plan required by the OHS and its regulations for the protection of workers in a work zone.”

visibility, traffic volumes, the Typical Layout (TL) diagram anticipated, signs, cones, traffic control set-up and take down procedures and a 360° light + 4 way flashers. The generation of a checklist table, which accounts for many of the items previously mentioned, may simplify and allow flexibility in the generation of a TPP for different worksites and operations. Furthermore, standard and pre-written TL set-up and take down instructions will be highly beneficial and help with OHS compliance. Please review your cone and sign requirements for size, reflectivity and placement. The typical cones for survey operations are TC-51B's with a reflective collar and I believe are available in 3 weights. The weight is important, as lighter cones tend to blow around more easily. Please note that changes to the sign size requirements took place on Jan. 1, 2003. Road Work Ahead signs must be 90 x 90 cm (TC-102A or TC-102B). Also, the placement of signs relative to your work zone are stated as minimum distances and you may have to adjust the distance to provide adequate advance notice to the motorists (document such in your TPP).

Railway Work

When survey field crews are scheduled to work on a railway right-of-way, the respective railway company must be contacted to discuss permit and safety requirements. For CN and CP the call is to their Engineering department. For some other railway authorities, (for example the Toronto Terminals Railway Company and GO Transit), UMA Engineering Ltd. in Mississauga should be contacted. During this call you will discuss the nature and extent of the work. In many cases a track occupancy permit will be required. The Engineering contact will usually consult the Track Supervisor, who will

decide the level of track control necessary in the particular situation.

CN has prepared a guideline entitled “Safety Requirements for Survey Work on CN Railway Right-of-Way by Non-CN Personnel”, which may be obtained from CN representative David Zoratto at 416-217-6741.

Personal Protective Equipment (PPE)

(See Sec. 79-86 Industrial Regs. & Sec. 21-27 Construction Regs. and such other)

What Personal Protective Equipment does your staff require? Items to consider include, but are not limited to, hard hats, safety boots, goggles, safety vests, jackets or coveralls and visors, etc. If chain saw operations are undertaken, further safety gear including cutting pants, boots, gloves, visor, hearing protection, etc. will be required. If your staff are wearing a 'nylon' vest on a construction site or while working on or near a road, there are reflectivity standards that must be met and it must be tear-away (69.1 Construction Regs.).

Monthly Workplace Inspections

Workplace inspections are required by the Act, sections 8(6) and 9(23). Inspections are required to identify hazards and deficiencies and safe operations and the like and they should be carried out monthly. Workplace vehicles should definitely be part of an inspection/maintenance program. The work vehicle can be viewed as both a workplace and equipment used for work. Recognize that vehicles need to be maintained, section 25(2)(b) of the Act, and that the employer is responsible for this. You would want a qualified mechanic to do the maintenance and inspection according to the manufacturers specs. The worker (user of the

vehicle) needs to bring any concerns about a vehicle to their employer's attention ASAP, section 28(1)(c), for the employer to address. Thus, the health and safety monthly inspection checklist should include vehicles. Remember you might prudently consider daily circle checks for vehicles for more minor items. The office is also required to be “inspected” monthly, even if it takes 5 minutes.

Reporting Notifications (MoL, WSIB)

If workplace accidents or injuries do happen, then the employer or designee may need to notify the local Ministry of Labour (MoL) and Workers Safety Insurance Board (WSIB) office within specific timelines depending on the severity of the accident.

If there is a critical injury (Reg 834 Critical Injury - Defined) then a Ministry (MoL) inspector, your joint health and safety committee, a H&S representative and union representative (if applicable) must be immediately notified. The following sections apply to the reporting requirements for this and lesser injuries; sections 51 to 53 (Act), section 8 to 12 Ont. Reg. (213/90) and section 5(1, 2 & 3) and 6 Ont. Reg. 851/90. You should review the uses and requirements of WSIB Forms 6, 7, 1492 and the treatment memorandum Form 156.

Remember to Review Knowledge of the Obvious!

Make sure that your crews are aware of any or all of the following possible field hazards and their consequences including but not limited to: sunburn/melanoma/skin cancer; ultraviolet rays and eye damage; heat stroke and dehydration; frostbite; hypothermia; poison ivy, oak and sumac; mosquito bites & West Nile virus; tick bites and Lyme disease; spider and snake bites (black widow, rattlesnake); tetanus; rabid animals; muscle strain and fatigue; giardia (from unclean water or soil); dog bites; general allergies such as hay fever and asthma or serious allergic

reactions to bee stings, etc. Don't assume that your staff are knowledgeable in all these areas, and remember your duties under the Act, especially the duty to make your staff aware of possible hazards and how to mitigate or avoid them.

Summary

This article has briefly highlighted some of the key issues that should be considered when preparing a Health and Safety Plan. It is important that employers and supervisors know and understand the Act and Regulations, have the appropriate work procedures and protocols written, and, train their staff to anticipate and protect themselves against hazards.

Please work safely and remember to visit your local WSIB office as one source for information handouts!



Nigel Day is presently the Survey Manager in the Sault Ste Marie office of M.F. Tulloch Inc. and is a member of the company's Joint Health and Safety Committee. Previously while employed at MTO, he promoted new legislative requirements in health and safety and contributed to the generation of a new health and safety plan for the MTO Surveys and Plans section. He was also involved in the discussion of the draft and final versions of the OTM, Book 7.

**“An Example of a Health and Safety Policy”
that is available on the Ministry of Labour website:
http://www.gov.on.ca/LAB/english/hs/ohsaguide/ohsag_appa.html**

Management of ~~~~ is vitally interested in the health and safety of its employees. Protection of employees from injury or occupational disease is a major continuing objective. ~~~~ will make every effort to provide a safe, healthy work environment. All supervisors and workers must be dedicated to the continuing objective of reducing risk of injury.

~~~~ as employer, is ultimately responsible for worker health and safety. As president (or owner/operator, chairperson, chief executive officer, etc.) of ~~~~, I give you my personal promise that every reasonable precaution will be taken for the protection of workers.

Supervisors will be held accountable for the health and safety of workers under their supervision. Supervisors are responsible to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and procedures established by the company.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization, from the president to the workers.

Signed: ~~~~  
President

## Valuable Websites:

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|--------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Ontario Statutes and Regulations:</b>                     | <a href="http://www.e-laws.gov.on.ca">www.e-laws.gov.on.ca</a>                     |
| <b>Most of the following sites can be accessed on:</b>       | <a href="http://www.preventiondynamics.com">www.preventiondynamics.com</a>         |
| <b>Canadian Centre for Occupational Health and Safety:</b>   | <a href="http://www.ccohs.ca">www.ccohs.ca</a>                                     |
| <b>Construction Safety Association of Ontario:</b>           | <a href="http://www.csao.org">www.csao.org</a>                                     |
| <b>Education Safety Association of Ontario:</b>              | <a href="http://www.esao.on.ca">www.esao.on.ca</a>                                 |
| <b>Industrial Accident Prevention Association:</b>           | <a href="http://www.iapa.ca">www.iapa.ca</a>                                       |
| <b>Institute for Work &amp; Health:</b>                      | <a href="http://www.iwh.on.ca">www.iwh.on.ca</a>                                   |
| <b>Mines and Aggregates Safety and Health Association:</b>   | <a href="http://www.masha.on.ca">www.masha.on.ca</a>                               |
| <b>Ministry of Labour:</b>                                   | <a href="http://www.gov.on.ca/LAB">www.gov.on.ca/LAB</a>                           |
| <b>Occupational Health Clinics for Ontario Workers Inc.:</b> | <a href="http://www.ohcow.on.ca">www.ohcow.on.ca</a>                               |
| <b>Workers Health and Safety Centre:</b>                     | <a href="http://www.whsc.on.ca">www.whsc.on.ca</a>                                 |
| <b>Workplace Safety &amp; Insurance Board:</b>               | <a href="http://www.wsib.on.ca">www.wsib.on.ca</a>                                 |
| <b>WorkSmartOntario:</b>                                     | <a href="http://www.worksmartontario.gov.on.ca">www.worksmartontario.gov.on.ca</a> |