Focus on Occupational Disease

Features
- Occupational Health
- Asbestos
- Welding Fumes
- WHMIS 2015
- WHMIS Poster (pull-out)
- Noise Exposure
- Carbon Monoxide
- Diesel Exhaust
- Healthy Workplaces
- Workplace Cancer
- Hazardous Materials
- Mesothelioma: A Personal Story from threads

CAUTION
ASBESTOS DUST HAZARD
Access Restricted to Persons Wearing Protective Clothing and Respirators

A specialized approach to health and safety
Identify controls

- Know the skin hazards on the jobsite. Read the label or (material) safety data sheet ((M)SDS) for a controlled product before using it. Look for phrases such as “skin sensitization” or “skin irritant”.
- Use gloves and other protective equipment specific to the hazard (consult the (M)SDS).
- Avoid excessive hand washing and don’t work with wet hands.
- Use mild soaps when washing your hands. Don’t use solvents.
- Apply hand cream to prevent your skin from drying out.
- Inspect your clothing throughout the shift for contamination, in particular your knees, forearms, and boots. If contaminated, change into dry clothing and wash the affected area.
- If working with wet concrete, tape the top of your boots to your pants, and tape your gloves to your wrists to prevent contact.

Demonstrate

Ask the crew to inspect their hands for signs of dryness, redness, flaking, or cracking. These are early signs of dermatitis and indicate the need for stronger skin protection measures.

Show workers the proper types of gloves they will need for the kind of work they will be doing. Show them how to prevent materials from contacting their skin or getting trapped in clothing.
Contents

Occupational health: A workplace hazard like any other .................................................. 4
Asbestos: Are you at risk of exposure? ................................................................. 6
Clearing the air about welding fumes and gases .................................................. 10
WHMIS is changing: Are you ready? ................................................................. 13
Letting the light back in ...................................................................................... 16
Reducing noise exposure without hearing protection ........................................... 18
Carbon monoxide: What you can’t see can hurt you ................................................. 20
Lifting the fog about diesel exhaust ...................................................................... 22
Staying healthy in the workplace: How eating right and exercising can help you work safe .......... 24
Dealing with the delay: The effort to prevent workplace cancer ........................................ 26
Hazardous materials don’t have to be dangerous .................................................. 27

On the cover...

Occupational disease is the cause of more fatalities in IHSA rate groups than all other traumatic injuries combined. Almost 90% of those deaths were related to asbestos exposure.

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Some of the most serious hazards faced by workers in the sectors served by IHSA aren’t what you might think. Occupational health hazards are often overlooked because they’re invisible and take years to develop. But the reality is that for many workers and their families, exposure to health hazards in the workplace have caused as much, if not more, devastation than high-hazard work activities such as working at heights, working around moving equipment, working with electricity, or driving vehicles.

Fatal occupational disease claims
The toll taken by occupational disease in Ontario is significant. In construction for instance, fatalities from exposure to health hazards are more than double the number of fatalities from traumatic events such as falls and motor vehicle incidents (Chart 1).

Chart 1: Total Fatalities in Construction Rate Groups (2004–2013)*

Most of the occupational disease deaths for IHSA member firms between 2004 and 2013 were caused by mesothelioma, lung cancer, asbestosis, and gastrointestinal cancer. All of these diseases are associated with asbestos exposure (Table 1).

* Source: Workplace Safety & Insurance Board

Although greater restrictions and controls have been put in place to reduce exposure to hazardous substances such as asbestos, much of the damage has already been done. While young workers will likely face less exposure to asbestos than the workers before them, there are concerns about emerging health risks associated with exposure to such things as nanomaterials found in many work materials, welding fumes, silica, and diesel exhaust.

And that’s just the tip of the iceberg. Many experts agree that, for a variety of reasons, the true number of fatalities caused by occupational health hazards is much higher than is actually recorded in workplace compensation data.

Non-fatal occupational disease claims
There is also concern about the impact non-fatal occupational diseases will have on workplaces. Claims for noise-induced hearing loss (NIHL) have been climbing drastically over the last 10 years. In fact, NIHL accounts for almost 50% of non-fatal occupational disease claims made by IHSA member firms. Chart 2 shows the 10-year trend for NIHL claims.

Regardless of the numbers, the impact that occupational disease has on workers, their families, and the workplace itself is tremendous. For many diseases, there is prolonged pain and suffering. Family members are often left to care for their loved one and watch them battle through their illness.
Table 1: Total Fatalities from Occupational Diseases by Industry (2004–2013)*

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesothelioma</td>
<td>14</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

Note: Rate Groups 830, 833, 835, and 838

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesothelioma</td>
<td>16</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>6</td>
</tr>
<tr>
<td>Acute Myocardial Infarction</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

Note: Rate Groups 551, 553, 560, 570, 577, 580, 584, 681, and 689

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesothelioma</td>
<td>248</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>151</td>
</tr>
<tr>
<td>Asbestosis</td>
<td>29</td>
</tr>
<tr>
<td>Gastrointestinal Cancer</td>
<td>23</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disorder</td>
<td>11</td>
</tr>
<tr>
<td>Other Circulatory System Diseases</td>
<td>7</td>
</tr>
<tr>
<td>Pulmonary Fibrosis</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>502</strong></td>
</tr>
</tbody>
</table>

Note: Rate Groups 134, 497, 704, 707, 711, 719, 723, 728, 732, 737, 741, 748, 751, and 764

Financially, the costs associated with occupational diseases are also higher. It is estimated that the average cost per occupational disease claim is four times higher than the average fatality claim from a traumatic event. This cost is eventually borne by industry.

This issue of *IHSA.ca Magazine* examines some common occupational health hazards and ways that workplaces can prevent exposures. You’ll find articles on asbestos, diesel exhaust, welding fumes, carbon monoxide, and noise. As well, we have information on the new WHMIS 2015 requirements, a personal story of a family dealing with mesothelioma, and tips for healthy lifestyle choices. There are also interviews with Marc Cousineau, the Provincial Hygienist for the Ministry of Labour (MOL), and Paul Demers, Director of the Occupational Cancer Research Centre.

For more detailed information on occupational health and control methods, visit [ihsa.ca/occupational_health](http://ihsa.ca/occupational_health)
Although asbestos usage has declined since the late 1970s, its previous widespread use in building materials means that workers in construction, maintenance, renovation, and demolition are still at risk of being exposed. Carpenters, insulation workers, plumbers, pipefitters, steamfitters, electricians, mechanics, and boilermakers have a high risk of developing an asbestos-related disease.

Since the 1980s, legislation and awareness have led to better measures for controlling exposure to asbestos. Anyone who could encounter asbestos during the course of their work should first consult Ontario Regulation 278/05: Asbestos on Construction Projects and in Buildings and Repair Operations.

This regulation covers:

- Duties of building owners, employers, and workers
- Identification of Type 1, 2, and 3 asbestos operations
- Measures and procedures for controlling exposure
- Requirements for respiratory protection and other PPE
- Requirements for instruction and training.

Many people believe that asbestos-containing material (ACM) is no longer being installed in Ontario. However, Regulation 278/05 only prohibits the spraying of asbestos materials (commonly used for fireproofing) and thermal insulation. Other forms of asbestos may continue to be used.

In Ontario, more workers die from exposure to asbestos than any other cause. For IHSA member firms, asbestos-related diseases were responsible for almost 90% of all fatal occupational disease claims approved by the Workplace Safety and Insurance Board (WSIB) between 2004 and 2013 (Chart 1).

The diseases associated with asbestos exposure are mesothelioma, lung cancer, asbestosis, and gastrointestinal cancer. They can develop 15 to 40 years after exposure to asbestos. In many cases, these diseases progress quickly, causing extreme pain, suffering, and eventually death.

**Chart 1: Fatal Occupational Disease Claims by Diagnosis (2004–2013)**

- Acute Myocardial Infarction 1%
- Other Circulatory System Diseases 1%
- COPD 2%
- Other 8%
- Asbestos-Related Diseases
  - 50% Mesothelioma
  - 29% Lung Cancer
  - 5% Asbestosis
  - 4% Gastrointestinal Cancer

**Abestos-Related Diseases 88%**

Source: WSIB
Identifying asbestos

Many workers are exposed to asbestos without even realizing it. In general, if the following materials were installed prior to the mid-1980s, they should be assumed to contain asbestos. Otherwise, the material should be tested by a lab in accordance with the methods set out in Reg. 278/05.

- Pipe and boiler insulation
- Vermiculite used as attic insulation
- Sprayed-on fireproofing
- Ceiling tiles and popcorn ceiling
- Floor tiles (asphalt, vinyl, or sheet vinyl and the paper underlay and mastic)
- Roofing shingles and felts
- Electrical panel components
- Gaskets
- Cement products such as siding on a home or building or pipe
- Asphalt
- Caulking
- Plaster (textured or smooth)
- Drywall joint compound

Legally, building owners are required to identify any designated substances on a construction site and provide a list and locations to all constructors bidding on the job (OHSA, s. 30). To help owners meet this requirement, IHSA has developed Owner’s Duties: Designated Substances on Construction Projects (WT30).

Asbestos operations

There are three types of asbestos operations in Ontario.

Type 1 (low risk)
If proper procedures are followed, it is unlikely that exposure will exceed acceptable limits (e.g., removing vinyl asbestos tiles by hand if the material is wetted).

Type 2 (medium risk)
These operations are likely to create exposure that exceeds acceptable limits (e.g., removing more than 1m² of drywall with asbestos joint compound).

Type 3 (high risk)
These operations involve frequent or prolonged exposure and can release substantial amounts of asbestos dust. This poses serious risks to both workers and others nearby (e.g., using a quick-cut saw to cut asbestos-containing cement pipe).

Asbestos fibres that are contained in mixtures of cement, adhesive, or other binding agents are referred to as non-friable ACM. When non-friable ACM is in good condition, the fibres are not easily crumbled and generally do not become airborne. However, if non-friable ACM is cut, ground, abraded, etc., it can release fibres and cause exposure.

Friable ACM is typically loose and when dry can become crumbled by slight pressure such as with your fingers or air movement. Friable ACM can be quite hazardous because the fibres can be easily released into the air and inhaled.

ACM that was originally installed in a non-friable condition can become friable over time due to
- wear and tear (e.g., friction)
- heat exposure
- weather conditions (e.g., rain, snow, sun)
- chemicals.

Did you know?

Vermiculite attic insulation was installed in some homes under the name “Zonolite”. Much of the vermiculite used in Ontario was mined from Libby, Montana and was contaminated with asbestos. Disturbing vermiculite (running cable, piping, exhausts, etc.) can release very high levels of asbestos fibres into the air. In most cases, vermiculite removal should follow procedures for Type 3 asbestos operations and should be carried out by a contractor who specializes in asbestos removal.
How to use the chart:

- Start in the middle of the chart and work outwards. Your goal is to reach the boxes that will tell you the type of removal (Type 1, 2, or 3) and the respirator you require.
- The outside circle of the chart tells you what kind of respirator you need. We’ve used A, B, C, and D to represent different kinds of respirators. Table 1 explains what each of the letters mean.
- For two categories of operations, the chart asks you to determine the size of the material you’re working with. Once you choose the size (area in m²), you have to stay within the colour of the size. For example, if you’re removing ceiling tiles and the area is greater than 7.5 m², you have to stay within the lavender area of the chart (this includes the striped area). You must not move to the beige area of the chart.

Legend

- **ACM** means asbestos-containing material.
- **HEPA** or **No HEPA** refers to whether your tool is attached to a dust-collecting device equipped with a high-efficiency particulate aerosol (HEPA) filter.
- **Wetted** or **Not wetted** refers to the practice of wetting the asbestos-containing material with “amended water” (i.e., a mixture of 1 cup of dishwashing detergent for every 20 litres of water).
Controls

The controls required for each type of asbestos operation are specified in Reg. 278/05. As the type (and risk) of operation increases, more controls are required to protect workers from asbestos exposure.

All workers involved in asbestos operations must be trained on:
1) the health effects of asbestos
2) the personal hygiene and work practices specified by the regulation and specific to the workplace
3) the ways to use, clean, and dispose of respirators and protective clothing.

Every worker and supervisor involved in a Type 3 operation must successfully complete an Asbestos Abatement training program approved by the Ministry of Training, Colleges and Universities.

For more information about controlling asbestos exposure, visit the Asbestos topic page on the IHSA website:

ihsa.ca/topics_hazards.aspx
Most welders know that the gases and fumes produced from welding are unsafe. But the health effects from breathing in those materials can vary significantly depending on the work environment, the type of welding, the material being welded, and several other factors. In addition, co-workers nearby may not be aware of the dangers and often don’t take the same precautions as welders.

Welding fumes are formed when the heated metal vapourizes and then cools. This causes small particles of metal and other material to become suspended in the air. Breathing in these particles can cause immediate health effects or serious health effects over time.

Welding fumes and gases come from:
- the welding rod
- the base metal
- paints and coatings on the metal or electrode (degreasers, etc.)
- shielding gases
- chemical reactions from ultraviolet light and heat.

The table on the next page contains a list of fumes and gases produced from welding, the places where they’re found, and the effects they can have on the human body.

Clearing the air about welding fumes and gases
If possible, use a shielding gas that produces fewer contaminants. For example, using a mixture of argon and carbon dioxide instead of straight CO₂ has been shown to reduce welding fumes by 25 per cent.

Use only the current, rod size, and arc length that is necessary for the job. A higher current, larger rod, and longer arc length will produce more fumes.

Welding with reversed polarity (workpiece negative) produces more fumes than welding with straight polarity (workpiece positive). NOTE: You can only weld with straight polarity if the welding rod is compatible.

Adjust your posture and technique. Welders who bend over close to the welding location and position themselves in the smoke plume will have a greater risk of exposure.

Read the warning label or M(SDS) for any hazardous material you’re working with and follow the recommended safety precautions.

Prevention
The hazards from welding fumes and gases must be recognized, assessed, and controlled or eliminated to protect workers. You may be able to eliminate them by joining metal together by some other means such as bolting them.

If it’s not possible to eliminate the hazards, implement controls at the source, along the path, or at the worker.

**At the source**
- Remove paints and coatings such as rust inhibitors from areas that are to be welded. However, do not use solvents for removal because they can release other toxins when heated.
- If possible, use welding rods or electrodes made of material that releases the least amount of toxic substances.
- Take special precautions when welding in a confined space. Follow the requirements of the Confined Spaces Regulation (632/05).

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- Read the warning label or M(SDS) for any hazardous material you’re working with and follow the recommended safety precautions.

### Contaminant Sources Table

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Source</th>
<th>Health Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>• Some paint pigments</td>
<td>• Kidney damage</td>
</tr>
<tr>
<td></td>
<td>• Cadmium-plated hardware</td>
<td>• Lung cancer</td>
</tr>
<tr>
<td>Hexavalent</td>
<td>• Stainless steel</td>
<td>Lung cancer</td>
</tr>
<tr>
<td>Chromium</td>
<td>• Inconel metal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Electrode</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>• Paint</td>
<td>• Destruction of red blood cells</td>
</tr>
<tr>
<td></td>
<td>• Primer</td>
<td>• Damage to kidneys and nervous system</td>
</tr>
<tr>
<td>Manganese</td>
<td>• Mild steel</td>
<td>Central nervous system effects that resemble Parkinson’s disease with uncontrolled tremors</td>
</tr>
<tr>
<td></td>
<td>• Welding rod</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>• Stainless steel</td>
<td>• Bronchitis</td>
</tr>
<tr>
<td></td>
<td>• Monel</td>
<td>• Long-term exposure can lead to nasal and lung cancer</td>
</tr>
<tr>
<td>Thorium</td>
<td>Thoriated tungsten electrodes used in TIG welding (mainly alpha and some beta radiation)</td>
<td>Cancer (cannot penetrate skin but a hazard when inhaled)</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>Galvanized coatings</td>
<td>Metal fume fever, which resembles flu. Lasts 18-24 hours after exposure</td>
</tr>
<tr>
<td>Acetylene</td>
<td>From acetylene not completely used up in oxyacetylene welding</td>
<td>Can displace oxygen and cause asphyxiation in confined spaces</td>
</tr>
<tr>
<td>Argon and</td>
<td>Used in MIG and TIG welding to shield electrode from oxygen</td>
<td>Can displace oxygen and cause asphyxiation in confined spaces</td>
</tr>
<tr>
<td>Helium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>• Welding arc changes carbon dioxide in the air to carbon monoxide</td>
<td>• Headache</td>
</tr>
<tr>
<td></td>
<td>• MiG and arc air gouging</td>
<td>• Dizziness</td>
</tr>
<tr>
<td></td>
<td>• Incomplete burning during welding</td>
<td>• Difficulty concentrating</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>• Welding arc changes nitrogen in air to nitrogen oxides</td>
<td>• Heart disorders</td>
</tr>
<tr>
<td>(NO and NO₂)</td>
<td>• MiG and plasma arc welding</td>
<td>• Coma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Death</td>
</tr>
<tr>
<td>Ozone</td>
<td>• Ultraviolet light used by the welding arc changes oxygen in air to another form of oxygen called ozone</td>
<td>• Irritation of eyes, nose, and throat</td>
</tr>
<tr>
<td></td>
<td>• MiG and plasma arc welding</td>
<td>• Chest pains</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wheezing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pulmonary edema</td>
</tr>
<tr>
<td>Phosgene</td>
<td>Ultraviolet radiation from welding arc decomposes chlorinated degreasers such as trichloroethylene and 1,1,1 trichloroethane</td>
<td>• Respiratory irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Chest pains</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pulmonary edema</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Death (at high concentrations)</td>
</tr>
</tbody>
</table>
The type of respirator required depends on the amount of exposure and the toxicity of the fumes. Refer to IHSA’s Respirator Selection Chart in Chapter 15 of the *Construction Health and Safety Manual* (M029) to choose the correct one for the type of work being done.

**Remember:** A welder who is required to wear a respirator must be instructed in its proper fitting, use, and maintenance and must have a fit test performed.

In addition, post signs warning others of the welding hazards in the area and letting them know the protective equipment that needs to be worn.

**How IHSA can help**
IHSA has several resources to help you control welding hazards at your workplace.

- Health and Safety Guide: Arc Welding (B012)
- Construction Health and Safety Manual (M029)—Chapter 41: Welding and Cutting
- Health and Safety Advisory: Toxic Exposure to Manganese in Welding Fume (W156)
- Safety Talks (V005)
- Welding – Inhalation Hazards
- Lead-based Paint – Welding and Cutting

**Along the path**
If it’s not possible to control hazards at the source, implement them along the path to the worker. Use ventilation to reduce the concentrations of airborne contaminants in the worker’s breathing zone and the work area. A combination of ventilation types should be used to control welding gases and fumes.

Ventilation can include:

- **Local exhaust ventilation** – smoke eaters, exhaust fans, air cleaners, or duct systems that remove airborne contaminants and exhausts them outdoors or away from a worker’s breathing zone
- **Natural dilution ventilation** – welding outside in a light breeze or inside with doors and windows open (Note: When using natural dilution ventilation, make sure to keep your head out of the welding fume.)
- **Mechanical dilution ventilation** – industrial fans.

Local exhaust ventilation should be used wherever possible as it is the most effective way to protect workers.

**At the worker**
According to section 46(2) of the Regulation for Construction Projects (213/91), respiratory equipment must be provided and used by workers if the hazard cannot be controlled through ventilation. In some cases, a respirator in combination with ventilation may be required.
IHSA has updated its half-day in-class WHMIS program to cover both the WHMIS 1988 and WHMIS 2015 classification systems. This course will be offered until the end of the transition period.

IHSA also has a new online WHMIS 2015 course that is available as a certificate program. There is also a non-certificate WHMIS Review program that can be used for the annual update and review of the WHMIS 1988 system. These online programs can be found on the e-Learning portal of our website: ihsa.ca/Training/eLearning.aspx

What has changed?
All Canadian provinces and territories, as well as the federal government in the case of federally regulated industries, require that employers educate their workers about hazardous products in the workplace. They must also make sure that supplier labels or workplace labels are attached to hazardous products and that (Material) Safety Data Sheets are available on site. These requirements have not changed with WHMIS 2015.

What has changed are the hazard classes, the pictograms used to communicate the hazards, the required elements on labels, and the format of (M)SDSs. These changes help ensure that Canada’s chemical hazard communication system is similar to other countries.

Worker education
Employers are required to educate their workers on whichever system is used in their workplace. If labels and (M)SDSs provided by the supplier meet the requirements of the new WHMIS, then workers need to be taught WHMIS 2015. If labels and (M)SDSs still follow the older WHMIS, then workers must be trained on WHMIS 1988.
WHMIS 2015

PICTOGRAMS AND CLASSES

In February 2015, the Workplace Hazardous Materials Information System (WHMIS) in Canada changed. There are new rules for classifying and labelling hazardous products and formatting Safety Data Sheets. Below are the new pictograms and hazard classes for WHMIS 2015.

1. Flame (fire hazards)
   - Flammable gases (Cat. 1)
   - Flammable liquids (Cat. 1, 2, and 3)
   - Flammable solids
   - Flammable aerosols
   - Pyrophoric (can catch fire if exposed to air)
   - Self-heating
   - Organic peroxides (can catch fire or explode if heated) (Types B*, C, D, E, and F)
   - Self-reactive (can catch fire or explode if heated or can react on its own) (Types B*, C, D, E, and F)
   - Substances and mixtures that emit flammable gases in contact with water

2. Exploding Bomb (explosion or reactivity hazards)
   - Self-reactive (Types A and B*)
   - Organic peroxides (Types A and B*)

3. Flame over circle (oxidizing hazards)
   - Oxidizing gases, liquids, and solids (can cause or intensify a fire or explosion)

4. Health Hazard (serious health effects)
   - Respiratory sensitizer
   - Mutagenicity (can cause mutations)
   - Carcinogenicity (can cause cancer)
   - Reproductive toxicity
   - Specific target organ toxicity (single or repeated exposure)
   - Aspiration hazard

5. Exclamation Mark (less serious effects)
   - Acute toxicity
   - Skin irritation
   - Eye irritation (Cat. 2 and 2A)
   - Skin sensitizer
   - Specific target organ toxicity (single exposure)

6. Corrosion
   - Corrosive to metals
   - Skin corrosion
   - Serious eye damage

7. Gas cylinder
   - Gases under pressure (can explode if heated and can cause frostbite)

8. Skull & Crossbones (death or toxicity)
   - Acute toxicity (Fatal or toxic if inhaled, if in contact with skin, or if swallowed)

9. Biohazardous Infectious Materials
   - Organisms or their toxins that can cause disease

*Both the Flame and Exploding Bomb pictograms are used for Self-reactive (Type B) and Organic peroxides (Type B).

Physical or Health Hazards not otherwise classified
Use the pictogram that is appropriate to the hazard identified. These classes and categories do not require a pictogram but the product label and SDS still require the signal word, hazard statement(s), and other required label elements.

- Flammable gases (Cat. 2)
- Flammable liquids (Cat. 4)
- Self-reactive (Type G)
- Organic peroxides (Type G)
- Combustible dusts (Cat. 1)
- Simple asphyxiants (Cat. 1)
- Eye irritation (Cat. 2B)
- Reproductive toxicity (lactation)

Workers who may be exposed to hazardous materials are required to be trained on the hazard classification system used in their workplace. Until the end of the transition period, December 1, 2018, most...
1. Flame (fire hazards)
   - Flammable gases (Cat. 1)
   - Flammable liquids (Cat. 1, 2, and 3)
   - Flammable solids
   - Flammable aerosols
   - Pyrophoric (can catch fire if exposed to air)
   - Self-heating
   - Organic peroxides (can catch fire or explode if heated)
     (Types B*, C, D, E and F)
   - Self-reactive (can catch fire or explode if heated or can react on its own)
     (Types B*, C, D, E and F)
   - Substances and mixtures that emit flammable gases in contact with water

2. Exploding Bomb (explosion or reactivity hazards)
   - Self-reactive (Types A and B*)
   - Organic peroxides (Types A and B*)

3. Flame Over Circle (oxidizing hazards)
   - Oxidizing gases, liquids, and solids (can cause or intensify a fire or explosion)

4. Health Hazard (serious health effects)
   - Respiratory sensitizer
   - Mutagenicity (can cause mutations)
   - Carcinogenicity (can cause cancer)
   - Reproductive toxicity
   - Specific target organ toxicity (single or repeated exposure)
   - Aspiration hazard

5. Exclamation Mark (less serious effects)
   - Acute toxicity
   - Skin irritation
   - Eye irritation (Cat. 2 and 2A)
   - Skin sensitizer
   - Specific target organ toxicity (single exposure)

6. Corrosion
   - Corrosive to metals
   - Skin corrosion
   - Serious eye damage

7. Gas Cylinder
   - Gases under pressure (can explode if heated and can cause frostbite)

8. Skull & Crossbones (death or toxicity)
   - Acute toxicity (Fatal or toxic if inhaled, if in contact with skin, or if swallowed)

9. Biohazardous Infectious Materials
   - Organisms or their toxins that can cause disease

*Both the Flame and Exploding Bomb pictograms are used for Self-reactive (Type B) and Organic peroxides (Type B).

Physical or Health Hazards Not Otherwise Classified
Use the pictogram that is appropriate to the hazard identified.

These classes and categories do not require a pictogram but the product label and SDS still require the signal word, hazard statement(s), and other required label elements.

- Flammable gases (Cat. 2)
- Flammable liquids (Cat. 4)
- Self-reactive (Type G)
- Organic peroxides (Type G)
- Combustible dusts (Cat. 1)
- Simple asphyxiants (Cat. 1)
- Eye irritation (Cat. 2B)
- Reproductive toxicity (lactation)

Are you compliant with new the legislation?
Workers who may be exposed to hazardous materials are required to be trained on the hazard classification system used in their workplace. Until the end of the transition period, December 1, 2018, most workplaces will be using both WHMIS 1998 and WHMIS 2015.

Use this poster to reinforce the training workers have received on the WHMIS 2015 system. Visit ihsa.ca/products to order additional copies of P003 and to order the WHMIS 1998 poster (P002).
We’ll never forget the date our lives were changed forever. Black Friday, June 4, 2004. My husband Jim was diagnosed with pleural mesothelioma, an incurable cancer caused by asbestos fibres in the lining of the lungs. He was given six months to live.

Jim faced each new challenge and the progression of this insidious disease with a wonderful, positive attitude that helped him beat the odds. After a long journey filled with tears, laughter, trauma, and loss, Jim died on October 22, 2011. He was such a fighter!

Jim enjoyed family, friends, sports, and fun in any order. The youngest of six, he grew up in Waterloo, Ontario. Drafted by the NHL, he played for the Hamilton Red Wings before family and his smaller height changed his career direction.

After hockey, Jim became a plumber/steamfitter. He had been working with asbestos pipe wrap and boiler removal since his late teens. Protective gear was unheard of in the early years of Jim’s career.

An active member of the community, his flamboyant, outgoing personality and outrageous sense of humour made him a joy to those around him. He endured a brain aneurysm at 33 and the loss of his first wife at 35, never giving up.

We met at work. I was a single mother of two young girls and Jim had two grown children and grandchildren. We married in 1996 and became a family.

We enjoyed golf, Jim played recreational hockey, and I was still raising my daughters. Jim often threatened to become “Uncle Buck” with his convertible and bathrobe if they got out of line! We were married eight years when illness began to slowly erode the life we had created and the energy and fun we had always known.

Jim had started to investigate post-retirement plans as a college instructor in the trades when he began feeling unwell, experiencing shortness of breath, tightness in the chest, and an extreme decrease in energy.

Mesothelioma was diagnosed—a disease, that can lay dormant for 40 years or more before becoming active. Our lives became seemingly endless procedures, treatments, decisions, loss. Anger and frustration became my closest friends. Questions shouted to a world at large were answered with silence.

When we were told that he was going to die, we were in shock. How do you tell your children—especially Jim’s who had lost their mother at an early age—such devastating news?

After surgery and recovery, we went west to visit Jim’s son and daughter and their families. My daughters were so close to the man they had come to think of as dad. My parents thought of him as a son. We spent time together, all of us trying hard to come to grips with our new reality.
Acceptance took a long time, but the sense of profound loss would never go. Jim, with his amazingly forthright approach said, “It can’t be helped, no one knew the dangers and I’ve had a good life.”

When faced with the unthinkable, it became urgent to put life in order. Visits to our lawyer, accountant, and funeral director put our minds at ease, more able to face what was to come. Some days were harder than others and pity parties were scheduled every Friday, half an hour or less. Scheduling our grief was one way to keep it from taking over. Time together with friends and as a family was the most important priority. We rented Camp Big Canoe in Bracebridge where we had volunteered many summers. Our families joined together for a weekend of fun and to give thanks for each other.

Our friends came to our house and built a deck so Jim could rest outside. They finished our basement so all the kids would have a place to stay when they came home. We were truly blessed.

One of the brightest lights in the darkness was being introduced to the Threads of Life family. We found support, energy, and love from these wonderful people who had endured such loss themselves.

After Jim passed away, I was in a black hole of sadness and loss. It is not easy to lose your best friend. He was such a wonderful man, larger than life, more charisma than any one person should be allowed, and a sense of fun like nobody else.

Sleep and hide was all I wanted to do. Friends and family gathered me in the warmth and safety of their love and let me grow again.

I did not know how I was going to fill the void that had opened up since his death. Threads of Life offered us the hand of welcome and the shoulder of support. We have also been fortunate to meet others who have suffered the loss of a loved one due to mesothelioma, and their support has been invaluable.

Our family now has a ‘call to action’—making sure all workers wear protection when exposed to asbestos. If you have been exposed, get tested—an airborne fibre may have reached you. It only takes one.

Be sure test information is followed-up (e.g., make sure to note ‘exposure to asbestos’ on the CT form you complete prior to your scan). Ask, ask, ask, then demand. Stop unnecessary workplace tragedy before it happens.

My world continues moving forward. At first, I was struggling to get up every day, then gradually laughter, fun, and sunshine slowly crept back in. Our family hosted a Worker’s Memorial Golf Tournament with the proceeds going to Threads of Life. A family invitation to Scotland came, so I went—the most amazing, terrific family holiday ever.

I have also decided that I am finally ready to take the Volunteer Family Guide Training course offered through Threads of Life. It was always our hope that I would carry on in this way after Jim was gone. I wasn’t ready until now and I hope I am able to support other families the way I have been supported.

This article is a combination of two articles originally published in the Threads of Life newsletter (Fall 2007 and Spring 2015). A special thanks to Heather Dahmer for allowing us to republish parts of her story and help bring awareness of the devastation caused by an occupational disease.
Reducing noise exposure without hearing protection

Hearing loss caused by noise is the fastest-growing occupational disease in Ontario. One reason is that it often happens gradually. People may not realize that the loud noise from day-to-day job tasks is damaging their hearing. And by the time they do realize it, it’s too late—the damage is permanent and can’t be reversed.

Protecting the hearing of workers should be part of a systematic and documented health and safety program that identifies and controls noise in the workplace. Such a program needs to include the following elements:

1. **Assessment** of noise levels in workplace to determine how loud it is and how much the workers are exposed to it
2. **Controls** to prevent noise from being generated in the workplace or from entering it
3. **Audiometric testing** to detect early changes to the hearing ability of workers so that further damage can be prevented and to determine the effectiveness of hearing loss prevention measures in the workplace
4. **Educating workers** on the health effects of noise, the procedures for protecting their hearing during specific job tasks, and the selection, care, use, and fit of hearing protection devices.

Often we think that the only way to prevent exposure to loud noise is by using hearing protection such as earplugs and earmuffs. However, personal protective equipment should be considered a last resort rather than the first choice for protection against noise. A better way is to stop the noise before it’s created or to use noise barriers to reduce the amount of noise that reaches the workers. This concept is referred to as the “hierarchy of controls” (Chart 1).

**Chart 1: Hierarchy of Controls for Noise Exposure**

- **At the source**
  - Eliminate
  - Change Process
  - Low-Noise Tools

- **Along the path**
  - Noise Barriers
  - Noise Absorbers
  - Enclose/Isolate

- **At the worker**
  - Job Rotation
  - Safety Rules
  - Signs
  - Training
  - Hearing Protection

**At the source**
The best way to control noise is to **eliminate** the hazard altogether. However, this may not always be possible or practical. The next best alternatives are to **substitute** a non-hazardous or less hazardous method, **enclose** or **isolate** the hazard, or **change the work process** to reduce the hazard.

- Substitute noisy tools and equipment with quieter ones. Consider noise levels when buying, leasing, or renting tools and equipment. For example, an electric sander producing 88 dBA is actually twice as loud as one producing 85 dBA and will cause a worker to be overexposed in 4 hours (at 88 dBA) compared to 8 hours (at 85 dBA). In general, newer equipment is quieter than older equipment and electrical tools are quieter than pneumatic or gas-powered ones.
Chart 2: Distances Away From Noise Source
Sound level in decibles (dBa)

- Move sources of loud noise away from workers or move workers away from the noise. As a general rule, each time the distance between a noise source and the worker doubles, the noise level can drop by up to 6 decibels (Chart 2). A reduction of 6 decibels means that the noise is four times quieter.
- Follow a maintenance schedule for tools and equipment. Excessive noise can be produced when there are loose parts such as nuts and bolts, worn out components, unlubricated parts, or a poor-running engine.
- If possible, retrofit equipment to make less noise. For example, lowering materials into a large steel bin with hard, dense rubber can reduce the noise when materials are thrown into it. Also, adding noise absorbers to older equipment or replacing old mufflers can make a big difference.
- Change work processes to minimize noise exposure. When planning a job, consider how much noise the different methods will create and choose one that makes less noise. For example, lowering materials into place rather than throwing them will reduce the loud noise caused by the impact.
- Try to schedule noisy jobs at times when more workers are away from the worksite.

Along the path
If the hazard cannot be controlled at the source, the next best alternative is to control it along its path to the worker.
- Install noise barriers or screens between the source of the noise and the workers. Barriers can be made of a variety of materials, from acoustical blankets or curtains, to fencing, to stacks of building materials such as plywood.
- Use sound absorbers to block or reduce noise levels. For example, insulated truck or equipment cabs can reduce the operator's noise exposure by 30 to 50 per cent.
- If possible, enclose noisy work processes or equipment such as generators and compressors in an insulated box or room to minimize the amount of noise that makes its way into the workplace.
- If enclosure is not possible, try isolating workers from the source of the noise by moving them to a separate room or enclosure.
- Close doors and windows. Many people like to drive with the window open to allow fresh air in, but the wind can cause excessive noise inside the cab. If someone is driving for long periods of time, this can be hazardous to their hearing. Equipment operators who work in enclosed cabs should keep the door closed as much as possible to reduce the amount of noise that gets in.

At the worker
If controls cannot be put in place at the source or along the path, the only other alternative is at the worker. Although personal protective equipment (PPE) such as earplugs and earmuffs can be effective, there are other ways to protect workers from loud noise.
- Effective training programs can help workers learn how to protect themselves from workplace hazards such as noise.
- Rotating workers between job tasks can ensure that they are not exposed to sources of loud noise for longer than the maximum recommended time.
- Warning signs can let workers know when they need to take precautions against noise exposure.
- Having standardized work rules in place can ensure that every worker follows the proper procedures to protect themselves against workplace hazards.

If you must use PPE such as earplugs and earmuffs, make sure to consider the following:
- Workers will need training on the proper selection, care, and use of the hearing protection device.
- Workers will need to know when a noise is so loud that they need to wear their hearing protection.
- Supervisors must be prepared to encourage and enforce the use of hearing protection on the worksite.
- Workers will need to hear certain sounds on the worksite such as other people, hazards such as moving vehicles, and warning sounds such as alarms. Make sure the type of earplugs or earmuffs that you use provide “uniform attenuation”. This blocks hazardous noise but lets higher frequency noise (voices, alarms, signals, etc.) pass through.

Controlling noise exposure in the workplace is becoming increasingly important because of the large number of hearing loss claims. Too often, employers wait until the problem becomes noticeable before taking preventive measures. Unfortunately, failure to provide timely preventive or control measures will lead to permanent noise-induced hearing loss for workers.

IHSA can help your company control noise exposure. Visit the Occupation Health section on our website for e-learning programs on Basics of Hearing Protection for Workers and Basics of Hearing Protection for Employers, as well as other helpful resources. You can also contact us to arrange noise assessment services.

Did You Know?
On July 1, 2016, a new noise regulation will come into effect. O. Reg. 381 will set out a maximum time-weighted average limit of 85 dBA of noise exposure over an 8-hour work shift and require employers to implement the hierarchy of controls and to provide adequate training and instruction on hearing protection devices.
Carbon monoxide: What you can’t see can hurt you

Most homes across Ontario are now equipped with a carbon monoxide detector. We know the deadly consequences of not having this life-saving device installed in our houses. But are you protected against this hazard at work?

Carbon monoxide poisoning has been the cause of many injuries, illnesses, and fatalities in Ontario workplaces. As the cold weather approaches, windows and doors are closed up tight, temporary heaters are used more frequently, and tarps are installed to retain heat. Changes like these increase the risk of exposure to carbon monoxide in the workplace when fuel-powered equipment is being used. Because of this increased risk, workers need to be made aware of the dangers and how to protect themselves.

What is carbon monoxide?
Carbon monoxide (chemical abbreviation: CO) is a colourless, odourless, and highly poisonous gas. It is produced by the incomplete burning of fuels. Engines powered by gasoline, propane, or diesel release carbon monoxide. So do fuel-fired heaters and certain welding processes.

Since you cannot see or smell CO, you need a detector to warn if this hazard is present. Breathing in CO gas interferes with your body’s ability to use oxygen. Eventually, it deprives the body tissues of the oxygen that it needs for survival.

CO gas can accumulate in any enclosed or poorly ventilated space where a source of CO is being operated. These include

- Vehicle and equipment cabs
- Parked vehicles
- Basements or parts of buildings under construction
- Tarped-in areas
- Parking and mechanic garages
- Workshops
- Warehouses
- Low-lying confined spaces (sewers, manholes, etc.).

Symptoms and health effects

At the first indication of symptoms, get into the fresh air. With severe exposure, seek immediate medical attention. Continued exposure can lead to loss of consciousness, arrested breathing, heart failure, and eventually death.

Workers with heart and lung disease are particularly sensitive to CO exposure. In addition, cigarette smokers have higher levels of CO in their blood and may experience the effects sooner than non-smokers.

Prevention

Your company’s Health and Safety Program should have written policies and procedures in place to control and monitor CO exposure in the workplace. As of July 1, 2016, changes to section 47 of the Regulation for Construction Projects (213/91) will require maintenance and servicing of internal combustion engines and air testing to ensure that the concentration of CO does not exceed the Occupational Exposure Limit (OEL).
OELs restrict the amount and length of time a worker can be exposed to hazardous chemicals in the air. Ontario Regulation 833: Control of Exposure to Biological or Chemical Agents sets the OEL for carbon monoxide as 25 parts per million (ppm) for an 8-hour Time-Weighted Average (TWA). Exposure shall not exceed 75 ppm for any period of 30 minutes and 125 ppm at any time.

Federal requirements to control chemical hazards in the workplace can be found in Part X of the Canada Occupational Health and Safety Regulations under the Canada Labour Code, Part II.

When putting policies and procedures in place to prevent CO exposure, the controls listed below are a good place to start.

**Education**
- Inform workers about the health effects of CO exposure, sources of CO in the workplace, and precautions that must be followed to ensure they are not exposed.
- Do not allow workers to work alone in places where CO may accumulate.
- Teach workers how to operate fuel-powered equipment safely.

**Air testing**
Use a direct-reading instrument to test the air and warn workers about dangerous levels of CO. These devices are relatively inexpensive to purchase and can also be rented. Units designed for in-home use are not suitable for the workplace. Be sure to follow the manufacturer’s instructions.

**Tools and equipment**
- Where possible, operate all fuel-powered tools and equipment outdoors. For example, put welding machines and generators outside and run the leads or the pump into the building.
- If fuel-powered tools and equipment must be used inside, avoid unnecessary idling, racing the engine, or braking erratically.
- Inspect and maintain fuel-powered tools and equipment in accordance with the manufacturer’s instructions to ensure they run properly and as cleanly as possible. Look for such things as leaking exhaust connections or manifolds, as well as loose or broken floor boards, exhaust pipes, and mufflers. Ensure that the air intake and fuel systems are working correctly.
- Never run an engine in an enclosed space unless a ventilation or exhaust system is available and working properly.
- Use electric tools or equipment where possible and when working in poorly ventilated areas.
- Use an indirect-fired heater for heating the work area rather than a direct-fired heater (e.g., open-flame or closed-flame heater). Indirect-fired heaters vent combustion by-products (including CO) outdoors while directing the heated air inside.

**Ventilation**
- Make sure the work area is well-ventilated.
- Keep doors and windows open, if possible.
- Use fans to bring in fresh air from outside.
- When necessary, use exhaust hoses to draw engine exhaust out of the work area.

If ventilation remains inadequate after implementing these control measures, use a supplied-air respirator.

**How IHSA can help**
IHSA has several resources on the Occupational Health section of our website that provide more information on carbon monoxide:
- Carbon Monoxide Safety Talk
- Carbon Monoxide: The Unseen Enemy for Drivers brochure (IHSA042)
- MOL Alert: Carbon Monoxide Poisoning Associated With Propane-Powered Floor Burnishers
- MOL Alert: Carbon Monoxide Hazards from Using Gas-Powered Pressure Washers in Parking Garages
- MOL Alert: Abrasive Blaster Dies of Carbon Monoxide Poisoning

**Did You Know?**
The Ministry of Labour recently introduced changes to section 47 of the Regulation for Construction Projects (213/91) to better protect workers from exposure to hazardous exhaust gases (e.g., carbon monoxide) released by internal combustion engines. These changes were recommended by IHSA’s Provincial Labour Management Health and Safety Committee (PLMHSC), which is an advisor to the Minister of Labour under Section 21 of the OHSA. The new requirements will come into effect on July 1, 2016.

Visit [ihsa.ca/Occupational-Health](http://ihsa.ca/Occupational-Health) and click Chemical Hazards.
Many workers in IHSA’s member industries are exposed to diesel exhaust daily. Drivers of diesel-powered trucks and buses, as well as operators of diesel-fueled heavy equipment such as bulldozers and tractors, are especially at risk. However, these workers and their employers may not fully understand the danger of inhaling diesel exhaust.

Health effects
Diesel exhaust is a mixture of harmful gases and fine particulates. The exhaust from diesel fuel can cause a range of health issues such as

- Coughing
- Eye, nose, and throat irritation
- Headaches
- Nausea
- Dizziness.

When inhaled deep into the lungs, these gases and particulates can cause more serious health problems such as respiratory illness, heart disease, and cancer.

In 2012, the International Agency for Research on Cancer (IARC), a specialized cancer agency of the World Health Organization, concluded that diesel engine exhaust can cause lung cancer. The Canadian Cancer Society estimates that 186 cases of lung cancer each year in Ontario are caused by exposure to diesel engine exhaust in the workplace.*

Exposure
Of the many cancer-causing agents Ontario workers are exposed to, diesel exhaust is one of the most common. Exposure may occur not only among workers who operate diesel-fueled vehicles but also those working in close proximity to the following equipment:

- Welding machines
- Generators
- Compressors
- Rough-terrain lift trucks
- Concrete trucks
- Packers
- Bobcats
- Cranes
- Front-end loaders
- Powered elevating work platforms
- Bucket trucks and aerial devices.

*These initial estimates are part of the Burden of Occupational Cancer Study, funded by the Canadian Cancer Society, which seeks to estimate the total number of work-related cancers in Canada. For more information about the project, visit www.occupationalcancer.ca
Always direct exhausts away from the equipment operator or nearby workers.

• Heavy equipment cabs should be climate controlled, under positive pressure (so that air moves from inside to outside), and equipped with a high-efficiency particulate air (HEPA) filter to reduce the operator’s exposure. Operators should keep the cab door closed whenever possible.

• Inspect vehicles and equipment for potential holes that could allow exhaust into the cab. Also inspect the exhaust system for leaks.

• Consider after-treatment devices, such as exhaust filters, which are available for many models of diesel engines to reduce the diesel particles emitted. Catalytic convertors may also be available to reduce harmful gas components of diesel exhaust.

• Use specialized fuels, fuel additives, or alternative fuels to minimize emissions. For example, low-sulphur diesel fuel or fuel additives can minimize the amount of diesel particulate matter emitted. Fuel alternatives such as biodiesel are also gaining popularity and can reduce emissions.

How IHSA can help
IHSA has several resources to help employers reduce the hazards of exposure to diesel exhaust. They can be downloaded for free by visiting the Occupational Health web page (ihsa.ca/Occupational-Health) and clicking Chemical Hazards.

• Occupational Health Risks: Operating Engineers and Heavy Equipment Operators (W114)
• Occupational Health Risks Booklet (W120) for all trades
• Vehicle Inspection Report (RF028)
• Preventive Maintenance Checklist

For more resources, refer to the article on carbon monoxide exposure on pages 20–21.
As the temperature changes, your lunch requirements may also change. For example, that peanut butter sandwich that kept you going all summer might not appear so tantalizing after sitting in the work truck in the freezing temperatures of January. Hot soups and stews are a great choice for a nutritious lunch but it can be tricky to keep them warm. Use a thermos or insulated bottle and fill it with boiling hot water for a few minutes to allow the insulated walls to warm up. Warm cereals like oatmeal can also keep your body warm and your energy levels up.

These are just a few of the options to consider. Your local health unit, as well as the Dietitians of Canada, may have additional resources that are as helpful as they are healthful.

Health and safety in the workplace is about more than hard hats or safety boots. There are other factors that can be as important for maintaining a healthy and safe workplace.

The “health” aspect of health and safety includes not only the various occupational diseases that arise from workplace exposures but also the more everyday aspects of nutrition, fitness, and a good night’s sleep. In this article, we outline a few of the key areas to consider when addressing healthy lifestyles in the workplace.

Nutrition
Part of a healthy lifestyle is maintaining a good diet and a healthy weight. Workers who are on the road or on the go from job to job may not spend much time thinking about what they are going to eat for lunch. They either pack something quickly from home or head to the nearest fast-food outlet.

So what are the options?
The tried and tested information in “Eating Well with Canada’s Food Guide” can be helpful. That familiar nutritional rainbow created by Health Canada outlines the four basic food groups and provides both serving suggestions and snack ideas.

Traditional lunch favorites such as peanut butter or meat sandwiches are great for keeping energy levels up during the day. Snacks such as crunchy vegetables, low-sugar granola bars, trail mix, or plain popcorn are a nutritious option.

And don’t forget about water. It’s an important part of a healthy diet, especially during warm weather work. If possible, take a refillable container or insulated bottle for water and add ice before leaving home.

As the temperature changes, your lunch requirements may also change. For example, that peanut butter sandwich that kept you going all summer might not appear so tantalizing after sitting in the work truck in the freezing temperatures of January. Hot soups and stews are a great choice for a nutritious lunch but it can be tricky to keep them warm. Use a thermos or insulated bottle and fill it with boiling hot water for a few minutes to allow the insulated walls to warm up. Warm cereals like oatmeal can also keep your body warm and your energy levels up.

These are just a few of the options to consider. Your local health unit, as well as the Dietitians of Canada, may have additional resources that are as helpful as they are healthful.
Fitness and stretching

Stretching before a shift can make a significant impact on your ability to maintain a healthy body. It helps warm you up, increases your flexibility and range of motion, and reduces the chances of strains and sprains. Combining stretching with a fitness routine can reduce stress, increase energy levels, and improve overall health.

Many companies have instituted stretching routines each day to allow workers to ease into their work and help prevent musculoskeletal disorders (MSDs). MSDs are injuries of the muscles, nerves, tendons, ligaments, joints, cartilage, or spinal discs. While an MSD may be a less serious injury than a fall or struck-by injury, the Workplace Safety and Insurance Board (WSIB) cites MSDs as the most common type of workplace injury in Ontario workplaces. They result in the most lost-time injuries for IHSA member firms and can cause workers significant pain and discomfort.

MSDs are not typically the result of any traumatic event (such as a slip, trip, or fall) but reflect a more gradual or chronic development. Left unaddressed, MSDs threaten both a worker’s health and safety and a company’s bottom line.

Even a few basic stretches can assist with MSD hazard reduction. The Institute for Work & Health (IWH) has published findings in recent months in the Journal of Occupational and Environmental Medicine. These findings provide strong evidence that implementing workplace-based resistance training can help prevent and manage MSDs of the neck, shoulder, arm, elbow, wrist, and hand. IHSA can also help. Our pocket-sized Before You Start Work Exercises Card (V012) provides illustrations of several warm-up and stretching exercises for workers.

A good night’s sleep

Many of us take for granted that a good night’s sleep is part of a safe workday. But there are many negative impacts that can plague workers who haven’t had enough rest. Workers who don’t get enough sleep or who are negatively affected by shift work can face a number of hazards such as:

- Inability to concentrate
- Reduced motor skills
- Errors in judgement.

One study found that new commercial drivers who are classified as obese are 50 per cent more likely to be in an accident. The main reason for this is fatigue due to irregular sleep patterns and the increased incidence of sleep apnea.

Other research has shown that sleep deprivation can have similar effects as alcohol intoxication. Being awake for 17 hours was shown to be equivalent to a blood alcohol content of 0.05.

Generally speaking, people need at least 7.5 to 8.5 hours of sleep each night. The US-based National Sleep Foundation offers these tips for getting a better rest:

- Stick to a sleep schedule of the same bedtime and wake-up time.
- Practice a relaxing bedtime ritual.
- Avoid naps, especially in the afternoon.
- Exercise daily.
- Keep your bedroom at a cool temperature and make sure it is free from distracting noise.
- Sleep on a comfortable mattress and pillow.
- Avoid bright light in the evening and expose yourself to sunlight in the morning to keep your circadian rhythms (i.e., body clock) in check.
- Avoid alcohol, cigarettes, and heavy meals in the evening.
- Spend the last hour before bed doing a calming activity in order to wind down.
- If you can’t sleep, go into another room and do something relaxing until you feel tired.

These suggestions may involve changing some well-established habits, and that can be a challenge. Be patient and stick with the changes you make in order to pave the way to a more healthful future.


Dealing with the delay
The effort to prevent workplace cancer

It is well established that many substances used in workplaces can cause cancer. It’s no surprise that the worst culprits, like asbestos and silica, get the most attention because they are so deadly. However, there are other causes of cancer that tend to be overlooked, like the sun for example.

It’s obviously an important task to raise awareness and adopt practices to prevent workplace cancer. The problem in doing so is the delay before the long-term health effects appear.

Paul Demers is the Director of the Occupational Cancer Research Centre, which is in partnership with Cancer Care Ontario. His research is helping find new ways to prevent cancer in the workplace.

“We know a lot about cancer in the construction industry—it’s less a matter of discovery than of trying to see how we’re doing in terms of controlling and monitoring what the risks of cancer are, using some of the data systems that we’ve set up,” Demers explained.

“We’d like to be doing more work on promoting prevention and increasing awareness.”

Unfortunately, there is an obstacle for researchers who study long-term health issues. And that is the delay between the workplace exposure and the fatal consequences that arrive later.

“We started reducing exposures and limiting the use of asbestos in the mid-1970s, and here we are with the rates of mesothelioma continuing to go up every year. At this point, we don’t have evidence that those rates have even peaked yet,” said Demers.

Because people are exposed to such a wide variety of chemicals and dusts or fibres in the places where they work, they may be in danger from more than one kind of cancer. What most people don’t realize, however, is that when they work with hazardous materials, cancer is just one way that their health can be damaged.

“These are toxic substances, and many of the ones that cause lung cancer also cause lung damage and have other health impacts associated with them,” said Demers. “I don’t feel like there’s anything that only causes cancer—there could be a multitude of effects.”

An example is silica, a material found in a variety of construction materials such as asphalt, brick, cement, concrete, drywall, grout, mortar, stone, sand, terrazzo, and tile. Breathing in silica dust from cutting, drilling, and grinding these building materials has been known to cause cancer. However, silica can also cause other diseases such as silicosis, scleroderma, tuberculosis, and chronic obstructive pulmonary disease (COPD).

When an employer is assessing hazards in the workplace, there’s a tendency to pay attention to the immediate dangers and eliminate hazards that could do serious physical harm to workers right now. But in the effort to prevent workplace cancer, that same sense of urgency also needs to be applied to exposure that is known to cause as much harm (if not more) after many years.

To eliminate the delay factor, we need to take cancer-causing hazards as seriously as electrocution or falls from heights.

“The message at the end of the day is that we can prevent cancer. It’s not that it’s inevitable, it’s that we can prevent it—we just need to make it a priority.”

For more information, visit the OCRC website at: occupationalcancer.ca
Infrastructure development in Ontario has seen a lot of innovations and technological advances in recent years. Workers are using new tools, equipment, processes, and materials, and there are more efficient ways of getting the job done.

However, with these advancements in the way work is carried out, materials installed many years ago may need to be removed. This can expose workers to hazards from the past that they may not be aware of or create new hazards that no one has ever had to deal with before.

For example, a dangerous material such as asbestos may not be used anymore, but sometimes it has to be removed. So workers who are renovating or demolishing buildings that were constructed before the 1980s may be exposed to asbestos.

**Asbestos**

Every day the Ministry of Labour (MOL) has over 20 industrial hygienists in the field, where they evaluate things such as work processes, air quality (occupational exposure limits), noise, WHMIS, chemicals like silica and lead, and the proper use of personal protective equipment (PPE). They are continually dealing with asbestos exposure in the maintenance, renovation, and demolition of older buildings.

Marc Cousineau is the Provincial Hygienist for the MOL. The data that the industrial hygienists in the field obtain suggests that asbestos is a huge concern, particularly in the construction industry.

"Mesothelioma and other types of asbestos-related diseases are still prevalent today," Cousineau said in a recent interview with IHSA.

"Asbestos will continue to be a problem due to the improper procedures that are being used to remove friable asbestos insulation from boilers and pipes, as well as not wearing the required respiratory protective equipment. Regulation 278/05 Asbestos on Construction Projects and in Buildings and Repair Operations is applicable to those operations, but there are many times where workers are involved yet not knowing what these hazardous products look like. So they’re not even thinking about something being asbestos."

Although building owners are required to identify any designated substances on a construction site, sometimes workers encounter hazardous material on the job unexpectedly. PPE such as respirators are a worker’s last line of defence against asbestos and other airborne hazards. However, workers need to be trained to recognize a hazard and how to protect themselves against it. Employers must supply workers with the PPE necessary to protect themselves and also train them in the proper use, fit, and care of a respirator.

**Isocyanates**

In addition to asbestos, the construction sector must also deal with new hazardous materials like isocyanates.

“We now use foam insulation, and people think that it’s just foam, not realizing it is isocyanate-based foam. Isocyanates are also being used as adhesives because they stick to most things and have a strong bond and short setup time. Isocyanates are sensitizers to the lungs and if they contact your skin, you can also become sensitized,” said Cousineau.

If you become sensitized, complications can emerge in the form of allergic-type reactions or asthma.

“So again, there are procedures and personal protective equipment that needs to be worn when working with isocyanates.”

Whether it’s because old hazardous materials are being removed or that new processes, materials, tools, or equipment are being used to increase efficiency, these products are harming workers on the job. However, Cousineau believes that complying with regulations and having the proper procedures, training, and PPE can control these hazards.

“In regard to industrial hygiene best practices, workplaces should ensure that worker exposures are not only within our exposure limits but also as low as you can reasonably have them. That’s the key point when working with or around any hazardous materials.”

For more information, visit the MOL website at: labour.gov.on.ca
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It will help in the event that your car breaks down or driving conditions cause you to pull over.

Invest in winter tires
Installing four winter tires of the same size, type, and tread pattern will improve traction and stability on icy or snow-covered roads.

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Do this at the beginning of the winter season to ensure your vehicle is prepared for winter conditions.

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