Ontario Compliance Briefing: How to Comply with the New Respiratory Protection Requirements



What's At Stake

OHS laws require employers to perform airborne tests and use the results to measure whether their workers are exposed to hazardous atmospheric conditions such as oxygen deficiency or dangerous levels biological and chemical agents. If so, employers must implement measures to either eliminate or reduce exposure to safe levels (known as known as Occupational Exposure Levels, or OELs). Ontario has just made a number of significant changes to its respiratory protection laws. If you're in Ontario, here are the 10 changes and what you'll need to do to comply with them when the new rules take effect on January 1, 2020. (Click here for a Model Respiratory Protection Policy that you can adapt to ensure compliance.)

The New OHS Regulations

The new respiratory protection rules revise a pair of existing OHS Regulations requiring respiratory protection measures:

- Reg. 185/19, *Control of Exposure to Biological or Chemical Agents*, which sets out general rules pertaining to all hazardous airborne agents; and

- Reg. 490/09, *Designated Substances*, which requires additional measures to protect workers against exposure to 11 substances that are particularly hazardous, such as asbestos, lead and silica.

The 11 Designated Substances
Acrylonitrile
Arsenic
Asbestos
Benzene
Coke oven emissions
Ethylene oxide
Isocyanates
Lead
Mercury
Silica
Vinyl chloride

The Purpose of the New OHS Regulations

In addition to being a bit out of date, current Ontario regulations impose different rules for different substances. The new rules, adapted as part of the government's broad plan to cut regulatory red tape, consolidate these disparate requirements into a set of updated and clarified requirements that apply to all substances and atmospheric hazards.

The 10 Changes

Before January 1, you'll need to review your current respiratory protection policies to ensure they meet the new changes.

1. Uniform Formula for Calculating Worker Exposure Levels

As in all parts of Canada, OELs in Ontario are based on threshold limit values (TLVs) set by the American Conference of Governmental Industrial Hygienists (ACGIH).

The 3 Types of Exposure Limits
Time-weighted average exposure value (TWAEV) is based on the average concentration of the substance in the workplace air a worker breathes during a normal 8-hour workday
Short-term exposure value (STEV) is the average concentration a worker can be exposed to for a short period (typically 15 minutes) without irritation, tissue damage or reduced alertness
Ceiling value (CV) is the maximum allowable limit regardless of exposure time

One of the biggest changes of the new rules is getting rid of the 16 different substance-specific formulas in favour of a single updated calculation that can be used for all substances and measurements.

What To Do: The new formula is a slightly modified version of the current one in which you use the results of airborne sampling and the OEL for a particular substance (revised OELs are listed in Table 1 of each Regulation) to calculate daily and weekly exposure levels:

$$C_1T_1 + C_2T_2 + \ldots + C_nT_n$$

where:

- C_1 = the concentration found in an air sample; and
- T_1 = the total time in hours to which the worker is taken to be exposed to concentration C_1 in a work day or a work week.

The calculations for TWAEV, STEV and mixtures of chemical agents that have additive health effects are unchanged.

2. New Method to Calculate Exposure Levels for Irregular Shifts

The other big change affecting measurements is the new method

for calculating the exposure of workers who work irregular shifts. Explanation: Exposure limits are generally based on regular shifts of 8 hours per day and 40 hours per week. Accordingly, the limits must be adjusted for workers who don't work such shifts. The revised regulations allow employers to use a method called the Quebec Model to calculate exposure for irregular shift workers.

What To Do: The Quebec Model provides a calculation formula for 4 different types or 'Categories' of hazardous substances. depending on which category the substance is in:

Quebec Model Exposure Calculations Methods

Category	Required Adjustment to Exposure Calculation
Category I: Substances regulated by a ceiling value, irritants with short-term effects and substances whose maximum exposure limits are based on technological limitations	No adjustment needed to exposure calculation for irregular shifts
Category II: Substances containing acute toxicants with short-term effects that don't accumulate	Must apply adjustment factor derived from hours of work per day
Category III: Substances containing chronic toxicants with long-term effects that do accumulate	Must apply adjustment factor derived from hours worked per week in accordance with 'repetitive work cycle,' i.e., calendar period in which work schedule is exactly repeated
Category III: Substances containing both acute + chronic toxicants with both short- + long-term effects	Must apply adjustment factor derived from hours of work per day or per week, whichever is more conservative

To calculate the OEL for an extended work shift, you must follow an formula for a substance in that Category in which

the work schedule is divided by a reduction factor and the product is multiplied by an adjustment factor.

3. New Hazardous Substance Substitution Requirements

Once you detect hazardous exposure, you must decide how to control it. The revised regulations consolidate the current 16 sets of substance-specific requirements into a single respiratory protection code that applies to all hazardous substances and designated substances. As before, you must follow the 'hierarchy of controls' giving preference to use of engineering controls. But now there's a new element you must consider even before engineering controls: substituting the biological or chemical agent with a less hazardous alternative.

What To Do: Here's the new hierarchy of control to follow in selecting methods of controlling respiratory hazards (in order of preference):

- Substitution;
- Engineering controls;
- Safe work practices;
- Hygiene facilities and practices; and
- PPE, as a last resort.

4. New Requirement to Rule Out Substitution Before Making Workers Use Respirators

Under current rules, you're supposed to use engineering controls to protect workers from a hazardous exposure; making workers use respirators is allowed only if appropriate engineering controls aren't available or functioning. While the same limitations remain, the new rules add another limitation for substitution.

What To Do: Effective January 1, 2020, don't rely on respirators as the primary protection against respiratory hazards unless you determine that the new conditions are met, i.e., that:

- Substitution isn’t reasonable or practical; AND
- The engineering controls required by the OHS regulations:
    - Don’t exist or can’t be obtained;
    - Aren’t reasonable to adopt, install or provide because of the duration or frequency of exposure or because of the nature of the process, operation or work;
    - Are rendered ineffective because of a temporary breakdown of the controls; or
    - Are ineffective to prevent, control or limit exposure due to an emergency.

When Respirators Allowed as Primary Source of Respiratory Protection

Current Rules	New Rules
Respirators allowed only if engineering controls: *Aren’t in existence or obtainable *Aren’t reasonable to adopt, install or provide because of duration or frequency of exposure or because of nature of process, operation or work *Are rendered ineffective because of a temporary breakdown of the controls *Are ineffective to prevent, control or limit exposure due to an emergency	Respirators allowed only if: *Substitution isn’t reasonable or practical *Engineering controls: >Aren’t in existence or obtainable

5. New Respirator Selection Standards

The revised regulations clarify the specific standards respirators must meet.

What To Do: Make sure the respirators you select:

- Are approved by NIOSH (or another testing and

certification agency and, in the latter case, provide at least equivalent protection to a NIOSH-approved respirator, in the opinion of an experienced industrial hygienist;

- Meet or exceed the ‘assigned protection factors’ for that particular type of respirator listed in new table (called ‘Schedule 2’) of the regulations.

SCHEDULE 2: ASSIGNED PROTECTION FACTOR FOR RESPIRATORS

Type of Respirator	Assigned Protection Factor
Air-Purifying Respirator ‘ filtering-facepiece	10
Air-Purifying Respirator ‘ half-facepiece	10
Air- Purifying Respirator ‘ full-facepiece	50
Powered Air-Purifying Respirator ‘ half-facepiece	50
Powered Air-Purifying Respirator ‘ full-facepiece	1,000
Powered Air-Purifying Respirator ‘ helmet/hood	25 1,000 if supported by an SWPF study
Powered Air-Purifying Respirator ‘ loose-fitting facepiece/visor	25
Airline Respirator ‘ continuous-flow half-facepiece	50
Airline Respirator ‘ continuous-flow full-facepiece	1,000
Airline Respirator ‘ continuous-flow helmet/hood	25 1,000 if supported by an SWPF study
Airline Respirator ‘ continuous-flow loose-fitting facepiece/visor	25

Airline Respirator ‘ pressure-demand half-facepiece	50
Airline Respirator ‘ pressure–demand full-facepiece	1,000
Self-Contained Breathing Apparatus (SCBA) ‘ pressure-demand full-facepiece	10,000
Multi-functional SCBA/Airline Respirator	10,000

6. New Selection Standards for Specific Types of Respirators

The regulations also spell out additional requirements for certain types of respirators.

What To Do: Make sure the respirators you select meet these new standards, including:

- Required HEPA filter or N-100, R-100 or P-100 particulate filters for respirators used to protect against asbestos exposure;
- Breathing air from supplied air respirators must meet CSA Z180.1-13; and
- Carbon monoxide monitors equipped with alarms required for compressed breathing air systems using an oil-lubricated compressor to supply breathing air.

7. New Requirement to Implement Respiratory Protection Program (RPP)

The regulations specify that employers must implement an RPP when respirators are used in lieu of substitution and engineering controls.

What To Do: The new RPP requirement sounds more daunting than it actually is. Substantively, the basic things you do today to ensure safe respirator use’training, fit testing, inspection, maintenance, recordkeeping, etc.’are remaining pretty much the same; the difference is that you’ll need to codify everything as part of a written RPP. You can use the

Insider Model Respirator Protection Program to create your own):

8. Clarified Requirements for Tight-Fitting Respirators

Spelling out what the current regulations merely imply, the new regulations clarify the steps employers must take to ensure proper fitting, inspection and use of tight-fitting respirators that require an effective seal with the face to function properly.

What To Do: First, you need to ensure that a proper qualitative or quantitative fit test is carried out and demonstrates that the facepiece forms an effective seal with the worker's face:

- Before a worker uses the respirator for the first time;
- Whenever there is a change in respirator facepiece, including the brand, model, and size;
- Whenever changes to the worker's physical condition could affect how the respirator fits; and
- At least once a year.

Ban workers from using or wearing anything that may interfere with the respirator's proper functioning or come between the sealing surface of the facepiece and the face, with the possible exception of specialty eyewear approved for use with positive pressure full facepiece respirators. Require workers who use a respirator which relies an effective seal with the face for proper functioning to be clean shaven, at least where the respirator seals with the face. Last but not least, make workers conduct positive and negative pressure user seal checks before each use of a tight-fitting elastrometric respirator.

9. Clarified Requirements for Respirator Training and Instruction

As under current rules, you must provide workers training and instruction on the proper use and care of their respirators.

The revised regulations clarify what that training must cover, including, at a minimum:

- How the respirator works to protect them and what its limitations are;
- How to inspect and maintain the respirator, including, in the case of an air-purifying respirator, end of service life indications or change out schedules for the cartridge, cannister or filter;
- Proper fitting of the respirator; and
- Cleaning and disinfecting the respirator.

What To Do: Provide workers the required training when they get their respirators and don't let them use a respirator for the first time unless and until they demonstrate that they understood and are capable of applying their training and instruction, for example, by demonstrating how to inspect the respirator and verify a proper fit.

10. New Uniform Rules for Medical Surveillance

The final big change affects medical surveillance of workers exposed to designated substances. Under current rules, there are 9 different separate medical surveillance codes based on which substance(s) the worker is exposed to. The new regulations consolidate that into a single consolidated code that applies to all designated substances requiring medical surveillance.