

# **Consultation on Proposed Changes to Ontario Regulation 490/09 – Designated Substances and the Requirements for Medical Surveillance, Respiratory Protection and Measuring**

## **Summary of Proposal**

The Ministry of Labour (MOL) is proposing amendments to Ontario Regulation 490/09- Designated Substances (O. Reg. 490/09 or “the Regulation”). If approved, the proposed amendments would update and consolidate the individual codes for medical surveillance, respiratory protection and measuring for the designated substances. An outline of the Ministry’s proposed regulatory changes is provided in the “Details of Proposal” section below. The MOL would appreciate receiving feedback on its proposal by July 6, 2015. For more information on how to submit your comments, please see the “How to Participate” section at the end of this document.

## **Background**

The [Occupational Health and Safety Act](#) (OHSA) provides regulation-making authority to prescribe any substance as a “designated substance” and to prohibit or strictly control its use in the workplace.

O. Reg. 490/09 under the OHSA sets out health and safety requirements respecting the control of worker exposure to designated substances. Eleven substances have been designated under the OHSA: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride.

In 2009, the Ministry of Labour began updating and consolidating the designated substance regulations under the OHSA. Work was undertaken in two phases. Phase 1 focused on updating and consolidating 11 individual designated substance regulations into one regulation. Phase 1 was completed in December 2009 with the introduction of O. Reg. 490/09, which took effect on July 1, 2010. Phase 2 focuses on updating and consolidating the requirements for the designated substances set out in 9 Codes for Medical Surveillance, 11 Codes for Respiratory Protection and 5 Codes for Measuring.

The work of Phase 2 is the subject of this consultation.

## **Details of Proposal**

### ***Proposed Changes to Section 15 with Respect to an Employer's Duty to Protect Third Party Workers.***

It is proposed that the Regulation be amended so that section 15 applies to workers engaged in construction to ensure that they are afforded the same protection as other third party workers exposed to a designated substance at a host employer's workplace.

### ***Proposed Changes to the Codes for (i) Medical Surveillance, (ii) Respirator Protection and (iii) Measuring are as follows:***

#### ***(i) Proposed Changes to the Codes for Medical Surveillance***

##### *Current Medical Surveillance Code Provisions*

Medical surveillance assists in the detection of exposure-related adverse health effects for medical follow-up, including removal from exposure, and may trigger the need for immediate evaluation of primary exposure control measures. Under O.Reg.490/09, there are currently separate Codes for Medical Surveillance respecting acrylonitrile, asbestos, benzene, coke oven emissions, isocyanates, lead, mercury, silica and vinyl chloride. There are no Medical Surveillance Codes respecting arsenic and ethylene oxide.

##### *Proposed Changes*

Following consolidation of the individual designated substance regulations in 2010, the Ministry embarked on a process to review all Codes under O. Reg. 490/09, including the Codes for Medical Surveillance set out in Part II of Schedule 2 of the Regulation. The Codes have not been substantially updated since they first came into effect in the 1980s. To assist in the review, the Ministry retained a team of occupational health experts from the Occupational Health Clinic/Department of Occupational and Environmental Health at St. Michael's Hospital in Toronto, Ontario. Taking into consideration their recommendations, the Ministry has drafted, and is proposing the adoption of a new consolidated Medical Surveillance Code for Designated Substances to replace all individual Medical Surveillance Codes currently referred to in O. Reg. 490/09. A copy of this Code is posted separately with this consultation document.

If approved, the Ministry's proposed new Medical Surveillance Code for Designated Substances would apply with respect to the medical examinations required by subsection 20(4) of O. Reg. 490/09, as part of a designated substance control program. Proposed amendments to subsection 20(4) would mandate pre-placement medical examinations, periodic medical examinations, exit medical examinations, and for some designated substances, medical examinations in the event of an acute exposure.

While the proposed requirements for medical examinations will vary depending on the designated substance and the type of medical examination (e.g. pre-placement,

periodic, etc.), the examinations typically require a medical history, a physical examination and specified clinical tests.

Other key proposed changes include:

1. Changes to lung cancer screening requirements for workers currently working in exposure to lung carcinogens. The changes proposed are based on the fact that there is no known medical/scientific organization that recommends clinical testing for the detection of early occupational lung cancer in asymptomatic individuals. Medical/scientific literature indicates that such tests do not reduce the mortality due to occupational lung cancer and unnecessary radiation exposures should be avoided. Medical surveillance is still recommended for the detection of pneumoconiosis for workers exposed to silica and asbestos.
2. Removal of the Medical Surveillance Code for Acrylonitrile. It is proposed that this Code be removed on the basis that a medical surveillance protocol is not justified based on a review of current scientific literature. The existing Code established in 1984 was based on a concern about carcinogenicity. Since that time however, based on more recent studies, both the International Agency for Research on Cancer (IARC) and the American Conference of Governmental Industrial Hygienists (ACGIH) have re-classified their carcinogenicity designations for acrylonitrile to possibly carcinogenic to humans (2B) from *probably carcinogenic to humans* (2A) and to *confirmed animal carcinogen with unknown relevance to humans* (A3) from *human carcinogen* (A1), respectively. The Ministry is proposing amendments to section 28 of O. Reg.490/09 that, if approved, would enable a worker whose health may have been affected by exposure to acrylonitrile to access medical examinations and clinical tests that are paid for by the employer.
3. Removal of the Medical Surveillance Code for Coke Oven Emissions. It is proposed that this Code be removed on the basis that there is a current lack of medical/scientific evidence to support occupational lung cancer screening in asymptomatic individuals, and that unnecessary exposures to radiation should be avoided. The Ministry is proposing amendments to section 28 of O. Reg.490/09 that, if approved, would enable a worker whose health may have been affected by exposure to coke oven emissions to access medical examinations and clinical tests that are paid for by the employer.
4. Removal of the Medical Surveillance Code for Vinyl Chloride. It is proposed that this Code be removed on the basis that research has shown that a medical surveillance protocol is not necessary for the prevention of angiosarcoma of the liver, which is the main adverse health outcome associated with exposure. Maintaining workplace exposures to within the current occupational exposure limit of 1 ppm time-weighted average set out in O. Reg. 490/09 has been shown to be sufficient to protect workers against angiosarcoma and any other potential adverse health outcomes. The Ministry is proposing amendments to section 28 of O. Reg. 490/09 that, if approved, would enable a worker whose health may have been affected by exposure to vinyl chloride to access medical examinations and clinical tests that are paid for by the employer.

5. Lowering of the biomedical markers for lead and mercury based on current scientific/ medical evidence, to prevent adverse health effects at lower concentrations.
6. Change in the requirement for “pre-employment” medical examinations to “pre-placement” medical examinations, to clarify that medical examinations are not required prior to an offer of an employment being extended.
7. Providing for “acute” exposure and “exit” medical examinations to ensure for appropriate medical follow-up.

## ***(ii) Proposed Changes to Codes for Respiratory Protection for Designated Substances***

### *Current Requirements*

There are currently 11 separate Codes for Respiratory Protection, one for each of the 11 designated substances referenced in O. Reg. 490/09. These codes may be requested here: [webohs@ontario.ca](mailto:webohs@ontario.ca)

### *Proposed Changes*

The individual designated substance Codes for Respiratory Protection are not easily accessible and have not been substantially updated since they first came into effect in the early to mid-1980s. The Ministry proposes to replace the individual Respiratory Protection Codes with new updated consolidated respiratory protection program requirements set out in O. Reg. 490/09.

An overview of the proposed new respiratory protection program requirements is set out below:

#### 1. Requirement for employers to:

- Ensure that respiratory equipment is appropriate for the form and concentration of airborne designated substance;
- Establish written measures and procedures that address the selection, care and use of the equipment; and
- Ensure workers are provided with instruction and training in the care and use of the equipment that addresses:
  - i limitations of the respiratory equipment;
  - ii inspection and maintenance of the respiratory equipment;
  - iii proper fitting of the respiratory equipment; and
  - iv cleaning and disinfection of the respiratory equipment.
- Where practicable, provide respiratory equipment to individual workers for their exclusive use.

#### 2. Requirements for respiratory equipment:

- Be approved by the United States (U.S.) National Institute for Occupational Safety and Health (NIOSH);
- Be selected with regard to:
  - i the airborne concentration of a designated substance;
  - ii its maximum use concentration;
  - iii the potential for an atmosphere with an oxygen concentration less than 19.5%;
  - iv an atmosphere that is immediately dangerous to life or health; and
  - v oil in the atmosphere;
- Meet or exceed the assigned protection factors set out in the following table:

Type of Respirator	Assigned Protection Factor
<sup>1</sup> Air-Purifying Respirator (APR) – filtering face-piece	10
<sup>1</sup> APR – half face-piece	10
<sup>1</sup> APR – full face-piece	50
Powered Air-Purifying Respirator (PAPR) – half face-piece	50
PAPR – full face-piece	1000
PAPR – helmet/hood	25 <sup>2</sup> 1,000
PAPR – loose fitting face-piece/visor	25
Airline Respirator (AR) (continuous flow) – half face-piece	50
AR (continuous flow) – full face-piece	1000
AR (continuous flow) – helmet/hood	25 <sup>2</sup> 1,000
AR (continuous flow) – loose fitting face-piece /visor	25
AR (pressure demand) – half face-piece	50
AR (pressure demand) – full face-piece	1000
Self-Contained Breathing Apparatus (SCBA) (pressure demand) – full face-piece	10,000

<sup>1</sup> Note: For asbestos, air-purifying face piece respirator with N-100, R-100 or P-100 particulate filter required.

<sup>2</sup> For specific respirators, an APF of 1000 may be assigned where so rated by NIOSH or where supported by a simulated workplace protection factor study supplied by the respirator manufacturer.

3. Requirement for airline respirators used in an atmosphere that is immediately dangerous to life or health (IDLH) to be fitted with an auxiliary supply of breathing air that has a rated service time of no less than 15 minutes.
4. Requirement for respiratory equipment using a compressed breathing air system to have:
  - i the breathing air meet the requirements set out in Table 1 of CSA Standard Z180.1-13, Compressed Breathing Air and Systems (January, 2013); and
  - ii air intake situated and installed in accordance with Section 6 – Air intake and Annex A of the CSA Standard Z180.1-13, Compressed Breathing Air and Systems (January, 2013).
5. Requirement for oil-lubricated compressors supplying breathing air to have:
  - i a continuous carbon monoxide monitor equipped with audible and visual alarms that activates at 5 ppm; and
  - ii the breathing air tested at least once every six months to ensure that it conforms to requirements set out in Table 1 of the CSA Standard Z180.1-13, Compressed Breathing Air and Systems (January, 2013).
6. Requirement for respiratory equipment using an ambient breathing air system to have:
  - i the breathing air meet the requirements set out in Table 1 of CSA Standard Z180.1-13, Compressed Breathing Air and Systems (January, 2013); and
  - ii the air intake situated and installed in accordance with Section 6 – Air intakes and Annex B of CSA Standard Z180.1-13, Compressed Breathing Air and Systems (January, 2013).
7. Requirement for respiratory equipment to be used and cared for in accordance with the manufacturer's specifications and procedures.
8. Requirement for workers to be assigned to an operation using a respirator only if they are physically able to perform the operation while using the respirator and to be referred to a physician if they experience breathing difficulty while using respiratory equipment.
9. Requirements for respiratory equipment designed to be tight fitting to:
  - i be tested for fit in accordance with a qualitative or quantitative fit test method set out in CSA Standard Z94.4-11, Selection, Use and Care of Respirators;
  - ii have workers using tight fitting elastomeric respirators to conduct positive and negative pressure user seal checks prior to every use;
  - iii not be provided to or used by a worker who has facial hair where the face piece of the respirator must meet the skin.

10. Requirements for respiratory equipment used:

- i exclusively by one worker, to be thoroughly cleaned, disinfected and inspected at the end of each day on which it is used, or more often if necessary;
- ii by more than one worker, to be thoroughly cleaned, disinfected and inspected at the end of each use;
- iii for emergency purposes, such as in an IDLH atmosphere, to be thoroughly inspected at least once a month and after each use.

11. Requirement for respiratory equipment parts that are damaged or deteriorated to be replaced prior to being used by a worker.

12. Requirement for respiratory equipment and replacement parts to be stored in a convenient, clean and sanitary location.

13. Requirement for employers to create and maintain maintenance records for powered air-purifying respirators, airline respirators and self-contained breathing apparatuses.

These proposed changes would apply to all designated substances and would ensure a consistent approach is taken with respect to the selection, use and care of respiratory protection used to protect workers from hazardous exposures.

***(iii) Proposed Change to Measuring Requirements for Designated Substances***

*Current Requirements*

Section 24 of O. Reg. 490/09 requires employers to ensure that the procedures for monitoring, sampling and determining airborne concentrations of a designated substance and worker exposure to airborne concentrations of a designated substance:

- (a) in the case of acrylonitrile, arsenic, coke oven emissions, ethylene oxide or isocyanates, satisfy the requirements of the applicable code for measuring an airborne substance, subject to section 32 (note: section 32 allows for variances from a code under certain conditions); or
- (b) in the case of asbestos, benzene, lead, mercury, silica or vinyl chloride, are in accordance with standard methods for workplace air sampling and analysis.

The Codes for certain designated substances referred to in clause (a) above may be requested here: [webohs@ontario.ca](mailto:webohs@ontario.ca)

These codes are outdated and not consistent with the approach taken with respect to measuring requirements for the remaining designated substances set out in clause 24(b) of O. Reg. 490/09.

### *Proposed Changes*

The Ministry proposes to withdraw all individual codes for measuring and update the measuring requirements set out in clause 24(b) of O. Reg. 490/09 to be applied to all designated substances.

Proposed changes include a requirement for employers to ensure that the procedures for monitoring, sampling and determining airborne concentrations of a designated substance and worker exposure to these substances:

- i are carried out in accordance with a standard method for workplace sampling and analysis published by: ASTM International, the Health and Safety Executive (U.K.), the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (Quebec) or the National Institute for Occupational Health and Safety (U.S.); and
- ii be performed by a person who is qualified because of knowledge, training and experience in accordance with recognized industrial hygiene practice.

These proposed changes would apply to all designated substances and would ensure a consistent approach is taken with respect to the airborne measurement and the determination of worker exposure to all designated substances.

To support workplace parties in meeting these requirements, the Ministry is proposing to list the following table of methods for measuring designated substances on the Ministry's website.



## **Proposed List of Standard Sampling and Analytical Methods for Measuring Designated Substances**

### ***Acrylonitrile:***

- NIOSH Method: 1604 Title: Acrylonitrile
- OSHA Method: 37 Title: Acrylonitrile

### ***Arsenic***

- NIOSH Method: 7901 Title: Arsenic Trioxide, as As
- OSHA Method: 1006 Title: Arsenic, Cadmium, Cobalt, Copper, Lead, and Nickel
- OSHA Method: ID 105 Title: Inorganic arsenic in workplace atmospheres
- HSE Method: MDHS 41/2 Arsenic and inorganic compounds of arsenic (except arsine) in air

### ***Asbestos***

- NIOSH Method: 7400 Title: Asbestos and other Fibers by PCM
- NIOSH Method: 7402 Title: Asbestos Fibers by TEM
- OSHA Method: ID-160 Title: Asbestos in Air

### ***Benzene***

- NIOSH Method: 1501 Title: Hydrocarbons, aromatic
- NIOSH Method: 3800 Title: Organic and Inorganic Gases by Extractive FTIR Spectrometry
- OSHA Method: 1005 Title: Benzene

### ***Coke Oven Emissions (Benzene soluble fraction)***

- OSHA Method: 58 Title: Coal Tar Pitch Volatiles (CTPV); Coke Oven Emissions (COE); Selected Polynuclear Aromatic Hydrocarbons (PAHs)

### ***Ethylene Oxide***

- NIOSH Method: 1614 Title: Ethylene Oxide
- NIOSH Method: 3702 Title: Ethylene Oxide by portable GC

- NIOSH Method: 3800 Title: Organic and Inorganic Gases by Extractive FTIR Spectrometry
- OSHA Method: 1010 Title: Ethylene Oxide
- OSHA Method: 50 Title: Ethylene Oxide
- OSHA Method: 49 Title: Ethylene Oxide

### ***Isocyanates***

- NIOSH Method: 2535 Title: Toluene-2,4, Diisocyanate
- OSHA Method: 42 Title: Diisocyanates: 1,6-Hexamethylene Diisocyanate (HDI) Toluene-2,6-Diisocyanate (2,6-TDI) Toluene-2,4-Diisocyanate (2,4-TDI)
- OSHA Method: 47 (MDI) Title: Methylene Bisphenyl Isocyanate (MDI)
- SKC Inc Title: ISOCHek® Isocyanate Method Note: Meets ASTM standards for TDI and HDI
- ASTM Method: ASTM D5932-08 (2013) Title: Standard Test Method for Determination of 2,4-Toluene Diisocyanate (2,4-TDI) and 2,6-Toluene Diisocyanate (2,6-TDI) in Air with 9-(N-Methylaminomethyl) Anthracene Method (MAMA) in the Workplace
- ASTM Method: ASTM D6562 -12 Title: Standard Test Method for Determination of Gaseous Hexamethylene Diisocyanate (HDI) in Air with 9-(N-methylaminomethyl) Anthracene Method (MAMA) in the Workplace
- ASTM Method: ASTM D6561-06 (2011) Title: Standard Test Method for Determination of Aerosol Monomeric and Oligomeric Hexamethylene Diisocyanate (HDI) in Air with (Methoxy-2-phenyl-1) Piperazine (MOPIP) in the Workplace
- HSE Method: MDHS 25/3 Title: Organic isocyanates in air

### ***Lead***

- NIOSH Method: 7082 Title: Lead by Flame AAS
- OSHA Method: ID-121 Title: Metal & Metalloid Particulates in Workplace Atmospheres (Atomic Absorption)
- OSHA Method: ID-125G Metal and Metalloid Particulates in Workplace Atmospheres (ICP Analysis)
- OSHA Method: ID-206 Title: ICP Analysis of Metal/Metalloid Particulates From Solder Operations
- OSHA Method: 1006 Title: Arsenic, Cadmium, Cobalt, Copper, Lead, and Nickel

- NIOSH Method: 2533 Title: Tetraethyl Lead (as Pb)
- NIOSH Method: 2534 Title: Tetramethyl Lead (as Pb)
- HSE Method: MDHS 6/3 Lead and inorganic compounds of lead in air.

### ***Mercury***

- OSHA Method: ID-140 Title: Mercury Vapor in Workplace Atmospheres
- OSHA Method: ID-145 Title: Particulate Mercury in Workplace Atmospheres

### ***Silica***

- NIOSH Method: 7500 Title: Silica, Crystalline, by XRD (filter re-deposition)
- OSHA Method: ID-142 Title: Quartz and Cristobalite in Workplace Atmospheres
- HSE Method: MDHS 101 Title: Crystalline silica in respirable airborne dusts

### ***Vinyl Chloride***

- NIOSH Method: 1007 Name: Vinyl Chloride
- OSHA Method: 75 Name: Vinyl Chloride

#### **Abbreviations:**

- ASTM: ASTM International
- HSE: United Kingdom Health and Safety Executive
- NIOSH: U.S. National Institute for Occupational Safety and Health
- OSHA: U.S. Occupational Safety and Health Administration

## **How to participate**

Stakeholder input is an essential part of updating and consolidating the individual codes for medical surveillance, respiratory protection and measuring for the designated substances in O. Reg. 490/09 under the Occupational Health and Safety Act. Stakeholders are invited to submit comments on any or all of the proposed changes. Specific concerns, such as implementation or cost concerns, should contain a clear description of the rationale and appropriate documentation.

The 60-day consultation period ends July 6, 2015. Submissions may be mailed, faxed, or sent electronically to the following addresses:

Mail: 2015 Designated Substances Regulation Review Project  
Ontario Ministry of Labour  
12<sup>th</sup> Floor, 400 University Avenue  
Toronto, ON M7A 1T7

Facsimile: (416) 326-7650

E-mail: [WebHSpolicy@ontario.ca](mailto:WebHSpolicy@ontario.ca)

### ***Notice to Consultation Participants***

Submissions provided to the Ministry of Labour ("ministry") in the context of this consultation are intended to facilitate the ministry's development of proposed amendments to the Ontario Regulation 490/09 -Designated Substances. This process may involve the ministry publishing your submissions or summaries of submissions (in hard copy and on the internet). In addition, the ministry may disclose your submissions to third parties as part of the consultation process or where required by law.

If you identify yourself or other individuals in the body of the submission, this identifying information may be published or otherwise disclosed to the public. Any name and contact information provided outside of the body of the submission will not be disclosed by the ministry unless required by law. Any individual who provides a submission and indicates an affiliation with an organization will be considered a representative of that organization and his or her name and other identifying information may be published or otherwise disclosed.

Personal information collected during this consultation is under the authority of the [Occupational Health and Safety Act](#) and is in compliance with Section 38 (2) of the [Freedom of Information and Protection of Privacy Act](#).

If you have any questions regarding privacy matters, you may contact the ministry's Freedom of Information and Privacy Office at 416-326-7786.