

Occupational Health and Safety Act

**ONTARIO REGULATION 490/09**

DESIGNATED SUBSTANCES

Consolidation Period: From January 1, 2013 to the e-Laws currency date.

Last amendment: O. Reg. 148/12.

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General

Definitions

1. In this Regulation,

“arsenic” means,

(a) arsenic in its elemental form,

(b) arsenic in inorganic compounds, except arsine, and

(c) arsenic in organic form only where both inorganic and organic compounds of arsenic are present; (“arsenic”)

“asbestos” means any of the following fibrous silicates:

1. Actinolite.

2. Amosite.

3. Anthophyllite.

4. Chrysotile.

5. Crocidolite.

6. Tremolite; (“amiante”)

“C” or “ceiling limit” means the maximum airborne concentration of a biological or chemical agent to which a worker may be exposed at any time; (“C”, “valeur C” ou “valeur plafond”)

“code for measuring an airborne substance” means, with respect to acrylonitrile, arsenic, coke oven emissions, ethylene oxide or isocyanates, the Code listed in Part I of Schedule 2 that pertains to that substance; (“code régissant la mesure des substances en suspension dans l’air”)

“code for medical surveillance” means, with respect to a designated substance other than arsenic or ethylene oxide, the Code listed in Part II of Schedule 2 that pertains to that substance; (“code régissant la surveillance médicale”)

“code for respiratory equipment” means, with respect to a designated substance, the Code listed in Part III of Schedule 2 that pertains to that substance; (“code régissant les appareils respiratoires”)

“coke oven emissions” means the benzene soluble fraction of total particulate matter of the substances emitted into the atmosphere from metallurgical coke ovens including condensed vapours and solid particulates; (“fumées de four à coke”)

“exposure” means exposure by inhalation, ingestion, skin absorption or skin contact; (“exposition”)

“isocyanates” means organic isocyanates; (“isocyanates”)

“joint health and safety committee” includes, in addition to a joint health and safety committee established under the Act,

(a) a committee of like nature described in subsection 9 (4) of the Act,

(b) an arrangement, program or system described in subsection 9 (4) of the Act in which workers or their representatives participate; (“comité mixte sur la santé et la sécurité”)

“lead” means elemental lead, inorganic compounds of lead and organic compounds of lead; (“plomb”)

“mercury” means elemental mercury, inorganic compounds of mercury and organic compounds of mercury; (“mercure”)

“metallurgical coke ovens” means a coke oven battery, including topside and its machinery, coke side and its machinery, pusher side and its machinery, the battery ends, the wharf and the screening station; (“fours à coke métallurgique”)

“Provincial Physician” means the person employed in the Ministry as the Provincial Physician; (“médecin provincial”)

“silica” means crystalline silica in a respirable form; (“silice”)

“STEL” or “short-term exposure limit” means the maximum airborne concentration of a biological or chemical agent to which a worker may be exposed in any 15-minute period; (“LECT” ou “limite d’exposition à court terme”)

“TWA” or “time-weighted average limit” means the time-weighted average airborne concentration of a biological or chemical agent to which a worker may be exposed in a work day or work week. (“LMPT” ou “limite moyenne pondérée dans le temps”) O. Reg. 490/09, s. 1.

Designated substances

2. The following chemical agents are prescribed as designated substances:

1. Acrylonitrile.
2. Arsenic.
3. Asbestos.
4. Benzene.

5. Coke oven emissions.
6. Ethylene oxide.
7. Isocyanates.
8. Lead.
9. Mercury.
10. Silica.
11. Vinyl chloride. O. Reg. 490/09, s. 2.

#### Application

#### Acrylonitrile

3. (1) Subject to subsection (2), this Regulation applies, with respect to acrylonitrile, to every employer and worker at a workplace where acrylonitrile is present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to acrylonitrile. O. Reg. 490/09, s. 3 (1).

(2) With respect to acrylonitrile, this Regulation does not apply to an employer or the workers of an employer at a workplace where acrylonitrile is not produced, processed or used, if a worker's exposure to acrylonitrile results only from the presence, use, handling or storage of goods made in the last stage of a process using polymers made from acrylonitrile. O. Reg. 490/09, s. 3 (2).

#### Arsenic

4. (1) Subject to subsection (2), this Regulation applies, with respect to arsenic, to every employer and worker at a workplace at which arsenic is produced, processed, used, handled or stored or is a waste product or by-product of a process and at which a worker is likely to be exposed to arsenic. O. Reg. 490/09, s. 4 (1).

(2) With respect to arsenic, this Regulation does not apply to mining operations, including concentrating, milling, washing, crushing, grinding, sifting or conveying of a metallic or non-metallic mineral or mineral-bearing substance or rock, unless the operations are carried on,

(a) in a plant where smelting, roasting or refining is carried on; or

(b) in or at a place that is contiguous with a plant where smelting, roasting or refining is carried on. O. Reg. 490/09, s. 4 (2).

#### Asbestos

5. (1) This Regulation applies, with respect to asbestos, to,

(a) every employer operating a mine or mining plant for the purpose of mining, crushing, grinding or sifting asbestos and to those workers of such an employer who are likely to be exposed to asbestos;

(b) every employer processing, adapting or using asbestos in connection with the manufacturing or assembling of goods or products and to those workers of such an employer who are likely to be exposed to asbestos;

(c) every employer engaged in the activities set out in subsection (2), and to those workers of such an employer who are engaged in those activities and are likely to be exposed to asbestos, if,

(i) on or before December 16, 1985, the employer,

(A) put into effect and maintained measures and procedures to control the exposure of workers to asbestos, and

(B) incorporated the measures and procedures into an asbestos control program in accordance with the regulations, and

(ii) the employer has maintained the control program referred to in sub-subclause (i) (B) in accordance with the regulations. O. Reg. 490/09, s. 5 (1).

(2) The activities mentioned in clause (1) (c) are:

1. The repair, alteration or maintenance of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles.

2. Work on a building that is necessarily incidental to the repair, alteration or maintenance of machinery or equipment. O. Reg. 490/09, s. 5 (2).

#### Benzene

6. (1) Subject to subsection (2), this Regulation applies, with respect to benzene, to every employer and worker at a workplace where a worker is likely to be exposed to benzene or a product containing benzene,

(a) during its transportation or transfer; or

(b) during its manufacture, processing, use, handling or storage. O. Reg. 490/09, s. 6 (1).

(2) With respect to benzene, this Regulation does not apply to the delivery of gasoline by a gasoline pump into the fuel tank of a motor vehicle, motor boat or other water craft or into a portable container at a service station or other premises. O. Reg. 490/09, s. 6 (2).

#### Coke oven emissions

7. This Regulation applies, with respect to coke oven emissions, to every employer and worker who works at a metallurgical coke oven and is likely to be exposed to coke oven emissions. O. Reg. 490/09, s. 7.

#### Ethylene oxide

8. This Regulation applies, with respect to ethylene oxide, to every employer and worker at a workplace where ethylene oxide is present. O. Reg. 490/09, s. 8.

#### Isocyanates

9. This Regulation applies, with respect to isocyanates, to every employer and worker at a workplace where isocyanates are produced, used, handled or stored and at which a worker is likely to be exposed to isocyanates. O. Reg. 490/09, s. 9.

#### Lead

10. This Regulation applies, with respect to lead, to every employer and worker at a workplace where lead is present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to lead. O. Reg. 490/09, s. 10.

#### Mercury

11. (1) Subject to subsection (2), this Regulation applies, with respect to mercury, to every employer and worker at a workplace where mercury is present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to mercury. O. Reg. 490/09, s. 11 (1).

(2) With respect to mercury, this Regulation does not apply to,

(a) an employer,

(i) who is engaged in the practice of dentistry, within the meaning of the Dentistry Act, 1991, or

(ii) who has one or more workers who engage in the practice of dentistry, within the meaning of the Dentistry Act, 1991;

(b) a worker who works in the office of an employer described in clause (a). O. Reg. 490/09, s. 11 (2).

#### Silica

12. This Regulation applies, with respect to silica, to every employer and worker at a workplace where silica is present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to silica. O. Reg. 490/09, s. 12.

#### Vinyl chloride

13. This Regulation applies, with respect to vinyl chloride, to every employer and worker at a workplace where vinyl chloride is present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to vinyl chloride. O. Reg. 490/09, s. 13.

#### Exception — construction

14. Despite sections 3 to 13, this Regulation does not apply, at a project,

(a) to an employer who engages in construction; or

(b) to the workers of an employer described in clause (a) who are engaged in construction. O. Reg. 490/09, s. 14.

#### Employer Duties

##### Duty to third party workers

15. (1) Subject to clause 14 (b), an employer to whom this Regulation applies with respect to a designated substance shall take every precaution reasonable in the circumstances to ensure the protection of a worker who,

(a) is not a worker of the employer; and

(b) is working in the workplace of the employer, is exposed to the designated substance and his or her health is likely to be affected by that exposure. O. Reg. 490/09, s. 15 (1).

(2) A worker shall comply with the requirements an employer imposes for the protection of the worker in accordance with subsection (1). O. Reg. 490/09, s. 15 (2).

##### Duty to limit airborne exposure

16. (1) Every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene facilities and practices to ensure that a worker's airborne exposure to each of the following designated substances and forms of designated substances does not exceed the TWA, STEL or C set out for the substance or form of substance in Table 1:

1. Benzene.
2. Coke oven emissions.
3. The forms of lead listed in Table 1.
4. The forms of mercury listed in Table 1. O. Reg. 490/09, s. 16 (1).

(2) Every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene facilities and practices to ensure that a worker's airborne exposure to each of the following designated substances and forms of designated substances is reduced to the lowest practical level and, in any event, does not exceed the TWA, STEL or C set out for the substance or form of substance in Table 1:

1. Acrylonitrile.
2. Arsenic.
3. The forms of asbestos listed in Table 1.
4. Ethylene oxide.
5. The forms of isocyanates listed in Table 1.
6. The forms of silica listed in Table 1.
7. Vinyl chloride. O. Reg. 490/09, s. 16 (2).

(3) Subject to section 18, an employer shall comply with this section without requiring a worker to wear and use respiratory equipment. O. Reg. 490/09, s. 16 (3).

(4) An employer shall calculate the airborne exposure of a worker to a designated substance in accordance with Part I of Schedule 1 to this Regulation. O. Reg. 490/09, s. 16 (4).

#### Duty re other isocyanates

17. (1) With respect to isocyanates other than those listed in Table 1, an employer shall,

(a) adopt and implement all such engineering controls, work practices and hygiene practices as are reasonable and practical; and

(b) provide a worker who handles, dispenses, mixes, applies, uses, transfers, disposes of, or deals with isocyanates and is likely to inhale isocyanates or come into contact with isocyanates, with appropriate personal protective equipment. O. Reg. 490/09, s. 17 (1).

(2) A worker shall wear and use the personal protective equipment provided by his or her employer when working with isocyanates other than those listed in Table 1. O. Reg. 490/09, s. 17 (2).

#### When respiratory equipment permitted

18. (1) An employer shall provide a worker with respiratory equipment if the employer cannot comply with the strict duty imposed by subsection 16 (1) or (2) because,

(a) an emergency exists; or

(b) the measures and procedures necessary to control the exposure of a worker to the airborne designated substance,

(i) do not exist or are not available,

(ii) are not reasonable or practical for the length of time or frequency of exposure or the nature of the process, operation or work, or

(iii) are not effective because of a temporary breakdown of equipment. O. Reg. 490/09, s. 18 (1).

(2) A worker who is exposed to any level of an airborne designated substance may request respiratory equipment from his or her employer, and the employer shall provide respiratory equipment in response to the request. O. Reg. 490/09, s. 18 (2).

(3) An employer who provides a worker with respiratory equipment shall ensure that the equipment,

(a) is appropriate in the circumstances for the form and concentration of airborne designated substance in respect of which the equipment is to be used;

(b) meets or exceeds the requirements set out in the applicable code for respiratory equipment; and

(c) is used in accordance with the requirements of the applicable code for respiratory equipment. O. Reg. 490/09, s. 18 (3).

(4) An employer who provides a worker with respiratory equipment shall provide training and instruction to the worker in the care and use of the equipment. O. Reg. 490/09, s. 18 (4).

#### Assessment and Control Program

##### Assessment

19. (1) An employer shall carry out an assessment of the exposure or likelihood of exposure of a worker to a designated substance in the workplace and record it in writing. O. Reg. 490/09, s. 19 (1).

(2) In carrying out the assessment, the employer shall consider and take into account,

(a) in the case of acrylonitrile, benzene, ethylene oxide, isocyanates or vinyl chloride, the methods and procedures used or to be used in the production, processing, use, handling and storage of the acrylonitrile, benzene, ethylene oxide, isocyanates or vinyl chloride;

(b) in the case of arsenic, lead, mercury or silica, the methods and procedures used or to be used in the processing, use, handling and storage of the arsenic, lead, mercury or silica;

(c) in the case of asbestos, the methods and procedures used or to be used in the processing, mining, use, handling and storage of the asbestos;

(d) in the case of coke oven emissions, the methods and procedures used or to be used in the metallurgical coking operation;

(e) the extent and potential extent of a worker's exposure to the designated substance; and

(f) the measures and procedures that are necessary to control exposure to the designated substance by means of engineering controls, work practices and hygiene facilities and practices. O. Reg. 490/09, s. 19 (2).

(3) The employer shall carry out the assessment in consultation with the joint health and safety committee and the committee may make recommendations respecting the assessment. O. Reg. 490/09, s. 19 (3).

(4) The employer shall provide a copy of the assessment to every member of the joint health and safety committee. O. Reg. 490/09, s. 19 (4).

#### Control program

20. (1) Subject to section 21, if an assessment discloses or would disclose, if carried out in accordance with section 19, that a worker is likely to be exposed to a designated substance and that the health of a worker may be affected by that exposure, the employer shall,

(a) develop, establish, put into effect and maintain measures and procedures to control the worker's exposure to the designated substance; and

(b) incorporate the measures and procedures described in clause (a) into a control program that satisfies the requirements of this section. O. Reg. 490/09, s. 20 (1).

(2) All control programs must provide for the following:

1. Engineering controls, work practices and hygiene facilities and practices to control the exposure of a worker to the designated substance.

2. Methods and procedures to monitor,

i. airborne concentrations of the designated substance in the workplace, and

ii. worker exposure to airborne concentrations of the designated substance.

3. The personal records described in subsection (6).

4. A training program for supervisors and workers on the health effects of the designated substance and the measures and procedures required under the control program. O. Reg. 490/09, s. 20 (2).

(3) In the case of a control program respecting coke oven emissions, the control program must provide for engineering controls, work practices and hygiene facilities and practices set out in Part II of Schedule 1, in addition to those provided for under paragraph 1 of subsection (2). O. Reg. 490/09, s. 20 (3).

(4) In the case of a control program respecting a designated substance other than arsenic or ethylene oxide, the control program for the substance must provide for pre-employment, pre-placement and periodic medical examinations of workers that include,

(a) a medical history that satisfies the requirements of the applicable code for medical surveillance;

(b) a physical examination that satisfies the requirements of the applicable code for medical surveillance; and

(c) clinical tests that are required by the examining physician and satisfy the requirements of the applicable code for medical surveillance. O. Reg. 490/09, s. 20 (4).

(5) The employer shall pay the expenses for the medical examinations and clinical tests described in subsection (4). O. Reg. 490/09, s. 20 (5).

(6) The records mentioned in paragraph 3 of subsection (2) are:

1. Personal records, maintained by the employer, of the exposure of a worker to a designated substance at the workplace, which must include,

- i. an identification of the worker, including the worker's date of birth,
- ii. the worker's jobs or occupations at the workplace,
- iii. results of monitoring the worker's exposure to airborne concentrations of the designated substance,
- iv. the time-weighted average exposure of the worker to the designated substance, and
- v. the use of respiratory equipment by the worker and its type.

2. Personal records, maintained by the employer, of the length of time a worker is taken to be exposed to isocyanates other than those listed in Table 1, which must include the information listed in subparagraphs 1 i, ii and v.

3. Personal records, maintained by physicians who have examined a worker under the control program, or under whose supervision clinical tests have been performed on a worker, of those medical examinations and clinical tests. O. Reg. 490/09, s. 20 (6).

(7) An employer shall develop the measures and procedures described in clause (1) (a) and the control program respecting a designated substance in consultation with the joint health and safety committee at the workplace, and the committee may make recommendations respecting them. O. Reg. 490/09, s. 20 (7).

(8) An employer shall,

(a) provide a copy of the control program to every member of the joint health and safety committee;

(b) acquaint every worker affected by the control program with its provisions; and

(c) make a copy of the control program available to workers both in English and the majority language of the workplace. O. Reg. 490/09, s. 20 (8).

Ethylene oxide, emergency program

21. (1) An employer is not required to develop a control program under section 20 with respect to ethylene oxide for a workplace if,

(a) ethylene oxide is handled or stored only in closed cylinders and is not otherwise present in the workplace; and

(b) the assessment discloses or would disclose, if carried out in accordance with section 19,

(i) that a worker is likely to be exposed to ethylene oxide only in the case of an accident or leak, and

(ii) that the health of the worker may be affected. O. Reg. 490/09, s. 21 (1).

(2) If subsection (1) applies, the employer shall,

(a) develop, establish, put into effect and maintain measures and procedures to protect workers in the event of an accident or leak of ethylene oxide; and

(b) incorporate the measures and procedures described in clause (a) into an emergency program that satisfies the requirements of subsection (3). O. Reg. 490/09, s. 21 (2).

- (3) An emergency program respecting ethylene oxide shall include provisions for,
- (a) identifying, by means of easily visible warning signs, each area where an ethylene oxide cylinder is present;
  - (b) an effective evacuation system;
  - (c) the location and supply of respiratory equipment to be used during an emergency;
  - (d) the testing and evaluation, where practical, of the atmosphere to determine the presence or absence of ethylene oxide during and following an emergency; and
  - (e) a training program to familiarize supervisors and workers with the health effects of ethylene oxide and the measures and procedures to be taken in case of an emergency. O. Reg. 490/09, s. 21 (3).
- (4) The employer shall develop the measures and procedures described in clause (2) (a) and the emergency program respecting ethylene oxide in consultation with the joint health and safety committee at the workplace, and the committee may make recommendations respecting the measures and procedures or program. O. Reg. 490/09, s. 21 (4).
- (5) The employer shall,
- (a) provide a copy of the emergency program to every member of the joint health and safety committee;
  - (b) acquaint every worker affected by the emergency program with its provisions; and
  - (c) make a copy of the emergency program available to workers both in English and the majority language of the workplace. O. Reg. 490/09, s. 21 (5).

#### Change requiring further assessment

22. (1) For the purposes of this section, a “change” means,
- (a) a change in a process involving a designated substance or in the methods and procedures in which the substance is produced, mined, processed, used, handled or stored, as the case may be; and
  - (b) in the case of coke oven emissions, a change in metallurgical coking operations. O. Reg. 490/09, s. 22 (1).
- (2) If there is a change in a workplace that could result in a significant difference in the exposure of a worker to a designated substance, the employer shall promptly carry out a further assessment of the exposure or likelihood of exposure of a worker to the designated substance. O. Reg. 490/09, s. 22 (2).
- (3) Subsections 19 (2), (3) and (4) apply to a further assessment under this section. O. Reg. 490/09, s. 22 (3).
- (4) Sections 20 and 21 apply with respect to the results of a further assessment under this section. O. Reg. 490/09, s. 22 (4).

#### Disputes

23. (1) An employer, a joint health and safety committee or a member of a joint health and safety committee may notify an inspector when a dispute arises between an employer and the joint health and safety committee as to,
- (a) an assessment or further assessment required under section 19 or 22;

(b) measures and procedures mentioned in clause 20 (1) (a) or 21 (2) (a);

(c) a control program respecting a designated substance, or any of its provisions required under section 20 or 22; or

(d) an emergency program for ethylene oxide, or any of its provisions required under section 21 or 22. O. Reg. 490/09, s. 23 (1).

(2) An inspector who receives a notice under subsection (1) shall investigate the dispute and shall give a decision in writing to,

(a) the employer; and

(b) the joint health and safety committee. O. Reg. 490/09, s. 23 (2).

(3) Nothing in subsection (2) applies so as to affect the power of an inspector to issue an order for a contravention of this Regulation. O. Reg. 490/09, s. 23 (3).

#### Measuring airborne concentrations

24. An employer shall ensure that 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; 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. O. Reg. 490/09, s. 24.

#### Posting of monitoring results

25. Whenever results become available under a control program that relate to the monitoring of airborne concentrations of a designated substance and worker exposure to airborne concentrations of a designated substance, the employer shall,

(a) promptly post the results in a conspicuous place or places where they are most likely to come to the attention of workers who would be affected by them and leave them posted for no less than 14 days;

(b) provide a copy of the results to the joint health and safety committee; and

(c) keep the results for no less than five years. O. Reg. 490/09, s. 25.

#### Worker's duty re control program

26. Every worker shall work in compliance with the work practices and hygiene practices in accordance with every control program respecting a designated substance that applies to the workplace. O. Reg. 490/09, s. 26.

#### Medical Examinations and Clinical Tests

##### Physician to receive records

27. (1) The employer shall provide a copy of a worker's personal exposure record to a physician who examines the worker or supervises clinical tests on a worker,

(a) in accordance with a control program to which subsection 20 (4) applies respecting a designated substance to which the worker may be or has been exposed; or

(b) under section 28, where the worker has been exposed to arsenic or ethylene oxide. O. Reg. 490/09, s. 27 (1).

(2) If subsection (1) requires an employer to provide a physician with a copy of a worker's personal exposure record, the worker may request the physician to provide the worker or the worker's physician with a copy of,

(a) the worker's personal exposure record;

(b) the results of the examination or clinical test. O. Reg. 490/09, s. 27 (2).

(3) In the case of a deceased worker, subsection (2) applies, with necessary modifications, to the next of kin or personal representative of the worker. O. Reg. 490/09, s. 27 (3).

(4) A physician who receives a request under subsection (2) or (3) shall comply with the request. O. Reg. 490/09, s. 27 (4).

#### Medical examination after exposure to arsenic or ethylene oxide

28. (1) A worker who has been exposed to arsenic or ethylene oxide shall, if he or she agrees, undergo a medical examination and any clinical tests, if,

(a) the worker or the worker's physician has reason to believe that the worker's health may be affected by the exposure and the worker or physician has so notified the employer in writing; or

(b) the employer has reason to believe that the worker's health may be affected by the exposure and the employer has so notified the worker in writing. O. Reg. 490/09, s. 28 (1).

(2) The employer shall pay the expenses of the medical examination and clinical tests. O. Reg. 490/09, s. 28 (2).

(3) The purpose of the medical examination and clinical tests is to determine whether the worker has an occupational illness because of the exposure to arsenic or ethylene oxide and whether the worker is fit, fit with limitations or unfit to continue working in exposure to arsenic or ethylene oxide. O. Reg. 490/09, s. 28 (3).

#### Results of examinations and tests

29. (1) This section applies when a physician conducts a medical examination of a worker or supervises clinical tests of a worker,

(a) in accordance with a control program to which subsection 20 (4) applies respecting a designated substance to which the worker may be or has been exposed; or

(b) under section 28, where the worker has been exposed to arsenic or ethylene oxide. O. Reg. 490/09, s. 29 (1).

(2) The physician who conducts the medical examination or supervises the clinical tests shall advise the worker and the worker's employer whether the worker has an occupational illness because of exposure to a designated substance and whether the worker is fit, fit with limitations or unfit to continue working in exposure to the designated substance. O. Reg. 490/09, s. 29 (2).

(3) In advising the worker and the worker's employer that the worker is fit with limitations or unfit to continue working in exposure to a designated substance, the physician shall,

(a) be governed by the applicable code for medical surveillance, if any; and

(b) provide the advice without giving or disclosing to the employer the records or results of the examination or tests. O. Reg. 490/09, s. 29 (3).

(4) The worker's employer shall act in accordance with the advice provided by a physician under subsection (2). O. Reg. 490/09, s. 29 (4).

(5) If a worker is removed from working in exposure to a designated substance because a medical examination or clinical test discloses that the worker has or may have a condition resulting from exposure to the substance and the worker suffers a loss of earnings occasioned thereby, the worker is entitled to compensation for the loss in the manner and to the extent provided by the Workplace Safety and Insurance Act, 1997. O. Reg. 490/09, s. 29 (5).

(6) On advising the worker and the worker's employer that the worker is fit with limitations or unfit to continue working in exposure to a designated substance, the physician shall also advise the joint health and safety committee, in writing and on a confidential basis, and in giving the advice shall indicate his or her opinion as to the interpretation to be placed on the advice. O. Reg. 490/09, s. 29 (6).

(7) On advising the worker and the worker's employer that a worker is fit with limitations or unfit to continue working in exposure to a designated substance, the physician shall promptly communicate that advice to the Provincial Physician. O. Reg. 490/09, s. 29 (7).

Retention: personal exposure records

30. (1) A physician who is provided with a copy of a worker's personal exposure record under clause 27 (1) (a) shall keep the copy in a secure place until the later of the following dates:

1. The 40th anniversary of the date the first record was created in the personal exposure record.

2. The 20th anniversary of the date the last record was added to the personal exposure record. O. Reg. 490/09, s. 30 (1).

(2) If the physician is no longer able to keep the copy of the personal exposure record, he or she shall forward it to the Provincial Physician or to a physician designated by the Provincial Physician, who shall keep the copy until the later of the dates specified in subsection (1). O. Reg. 490/09, s. 30 (2); O. Reg. 148/12, s. 1.

(3) If a physician is not required by subsection (1) to keep a copy of a worker's personal exposure record, the employer shall keep the record in a secure place until the later of the dates specified in subsection (1). O. Reg. 490/09, s. 30 (3).

(4) If the employer is unable to keep the personal exposure record, the employer shall forward it to the Provincial Physician, who shall keep it until the later of the dates specified in subsection (1). O. Reg. 490/09, s. 30 (4).

Retention: records of medical examinations

31. (1) A physician who conducted medical examinations of a worker or supervised clinical tests of a worker shall, if section 29 applies, keep the records of the examinations and tests in a secure place until the later of the following dates:

1. The 40th anniversary of the date the first record was made.

2. The 20th anniversary of the date the last record was made. O. Reg. 490/09, s. 31 (1).

(2) If the physician is no longer able to keep the records of the medical examinations and clinical tests, he or she shall forward them to the Provincial Physician or to a physician designated by the Provincial Physician, who shall keep the records until the later of the dates specified in subsection (1). O. Reg. 490/09, s. 31 (2); O. Reg. 148/12, s. 2.

Variance from a Code

Variance from a code

32. For the purposes of this Regulation, the methods and procedures that may be used or adopted may vary from the Codes issued by the Ministry if the protection afforded thereby or the factors of accuracy and precision used or adopted are equal to or exceed the protection or the factors of accuracy and precision in the Codes issued by the Ministry. O. Reg. 490/09, s. 32.

33. Omitted (revokes other Regulations). O. Reg. 490/09, s. 33.

34. Omitted (provides for coming into force of provisions of this Regulation). O. Reg. 490/09, s. 34.

Table / Tableau 1

EXPOSURE LIMITS / LIMITES D'EXPOSITION

Agent / Agent [CAS No. / numéro CAS]

Time-Weighted Average Limit (TWA), Short-Term Exposure Limit (STEL), Ceiling Limit (C) and Notations / Limite moyenne pondérée dans le temps (LMPT), limite d'exposition à court terme (LECT), valeur plafond (C) et notations

TWA / LMPT

STEL / C

Notations / Notations

LECT / C

Acrylonitrile / Acrylonitrile [107-13-1]

2 ppm

C 10 ppm

Skin / Peau

Arsenic, elemental arsenic and inorganic compounds [7440-38-2], and organic compounds (only where both inorganic and organic compounds are present), as As. / Arsenic, arsenic élémentaire et composés inorganiques [7440-38-2], et composés organiques (seulement lorsque les composés inorganiques et organiques sont tous les deux présents), en As

0.01 mg/m<sup>3</sup>

0.05 mg/m<sup>3</sup>

Asbestos – All forms / Amiante – Toutes les formes [1332-21-4]

0.1 f/cc (F)

Actinolite / Actinolite [77536-66-4]

0.1 f/cc (F)

Amosite / Amosite [12172-73-5]

0.1 f/cc (F)

Anthophyllite / Anthophyllite [77536-67-5]

0.1 f/cc (F)

Chrysotile / Chrysotile [132207-32-0]

0.1 f/cc (F)

Crocidolite / Crocidolite [12001-28-4]

0.1 f/cc (F)

Tremolite / Trémolite [77536-68-6]

0.1 f/cc (F)

Benzene / Benzène [71-43-2]

0.5 ppm

2.5 ppm

Skin / Peau

Coke Oven Emissions<sup>1</sup> / Fumées de four à coke<sup>1</sup>

0.15 mg/m<sup>3</sup>

Ethylene oxide / Oxyde d'éthylène [75-21-8]

1 ppm

10 ppm

1.8 mg/m<sup>3</sup>

18 mg/m<sup>3</sup>

Isocyanates, organic compounds / Isocyanates, composés organiques

Toluene diisocyanate (TDI) / Diisocyanate de toluène (TDI) [584-84-9] [91-08-7]

0.005 ppm

C 0.02 ppm

Methylene bisphenyl isocyanate (MDI) / Diisocyanate-4,4' de diphenylméthane (MDI) [101-68-8]

0.005 ppm

C 0.02 ppm

Hexamethylene diisocyanate (HDI) / Diisocyanate d'hexaméthylène (HDI) [822-06-0]

0.005 ppm

C 0.02 ppm

Isophorone diisocyanate (IPDI) / Diisocyanate d'isophorone (IPDI) [4098-71-9]

0.005 ppm

C 0.02 ppm

Methylene bis (4-cyclohexylisocyanate) / Diisocyanate-4,4' de dicyclohexylméthane [5124-30-1]

0.005 ppm

C 0.02 ppm

Methyl Isocyanate / Isocyanate de méthyle [624-83-9]

0.02 ppm

Skin / Peau

Lead [7439-92-1], elemental lead, inorganic and organic compounds of lead, as Pb / Plomb [7439-92-1], plomb élémentaire, composés inorganiques et organiques du plomb, en Pb

Elemental lead, inorganic and organic compounds of lead, as Pb except tetraethyl lead / Plomb élémentaire, composés inorganiques et organiques du plomb, en Pb, sauf le plomb tétraéthyle [78-00-2]

0.05 mg/m<sup>3</sup>

Skin (organic compounds) / Peau (composés organiques)

Tetraethyl lead, as Pb / Plomb tétraéthyle, en Pb [78-00-2]

0.10 mg/m<sup>3</sup>

0.30 mg/m<sup>3</sup>

Mercury [7439-97-6], elemental mercury, inorganic and organic compounds of mercury, as Hg / Mercure [7439-97-6], mercure élémentaire, composés inorganiques et organiques du mercure, en Hg

All forms of except alkyl, as Hg / Toutes les formes de mercure, sauf les composés alkylés, en Hg

0.025 mg/m<sup>3</sup>

Skin / Peau

Alkyl compounds of, as Hg / Composés alkylés du mercure, en Hg

0.01 mg/m<sup>3</sup>

0.03 mg/m<sup>3</sup>

Skin / Peau

Silica, Crystalline / Silice cristalline

Quartz / Tripoli / Quartz ou tripoli [14808-60-7; 1317-95-9]

0.10 mg/m<sup>3</sup> (R)

Cristobalite / Cristobalite [14464-46-1]

0.05 mg/m<sup>3</sup> (R)

Vinyl chloride / Chlorure de vinyle [75-01-04]

1 ppm

Endnotes and Abbreviations:

Notes et abréviations :

1 Means the benzene soluble fraction of total particulate matter of the substances emitted into the atmosphere from metallurgical coke ovens including condensed vapours and solid particulates.

1 Fraction soluble dans le benzène de la matière particulaire totale des substances rejetées dans l'atmosphère par les fours à coke métallurgique, y compris les vapeurs condensées et les particules solides.

[CAS No.] - CAS Registry Number.

[numéro CAS] - numéro de registre CAS.

f/cc - Fibres per cubic centimetre of air.

f/cc - Fibres par centimètre cube d'air.

mg/m<sup>3</sup> - Milligrams of the agent per cubic metre of air.

mg/m<sup>3</sup> - Milligrammes par mètre cube d'air.

ppm - Parts of the agent per million parts of air by volume.  
ppm - Parties par million de parties d'air par volume.

Skin - Danger of cutaneous absorption.  
Peau - Danger d'absorption cutanée.

(F) Respirable fibres: length  $> 5 \mu\text{m}$ ; aspect ratio  $\geq 3:1$ , as determined by the membrane filter method at 400-450 times magnification (4-mm objective), using phase-contrast illumination.

(F) Fibres respirables : longueur supérieure à  $5 \mu\text{m}$ ; rapport longueur-diamètre supérieur ou égal à 3:1, déterminé par la méthode de filtration par membrane à un grossissement de 400 à 450 fois la grandeur réelle (objectif de 4 mm), en utilisant un éclairage par contraste de phase.

(R) Respirable fraction: means that size fraction of the airborne particulate deposited in the gas-exchange region of the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of  $4 \mu\text{m}$  at 50 per cent collection efficiency.

(R) Fraction respirable : la tranche granulométrique des particules en suspension dans l'air qui sont déposées dans la zone d'échange de gaz des voies respiratoires et recueillies lors d'un échantillonnage de l'air à l'aide d'un appareil de sélection granulométrique qui : a) satisfait aux critères de sélection granulométrique établis par l'ACGIH; b) a un point de coupure à  $4 \mu\text{m}$  à 50 pour cent d'efficacité.

O. Reg. 148/12, s. 3.

Schedule 1

PART I

AIRBORNE MEASUREMENT AND CALCULATION OF EXPOSURE

1. Airborne concentrations of a designated substance are expressed as,

(a) parts of the agent per million parts of air by volume (ppm);

(b) milligrams of the agent per cubic metre of air ( $\text{mg}/\text{m}^3$ ); or

(c) fibres per cubic centimetre of air ( $\text{f}/\text{cc}$ ).

2. In determining exposure to airborne concentrations of a designated substance, no regard shall be had to the wearing or use of personal protective equipment.

3. The average concentrations of a designated substance to which a worker is exposed shall be determined from analysis of air samples taken as being representative of the exposure of the worker to the designated substance during work operations in accordance with section 24 of the Regulation.

4. The time-weighted average exposure to an airborne designated substance in a work day or work week shall be calculated as follows:

1. The cumulative daily or weekly exposure shall be calculated using the following formula:

$$C_1T_1 + C_2T_2 + \dots + C_nT_n$$

where,

C1 is the concentration found in an air sample, and

T1 is the total time in hours to which the worker is taken to be exposed to concentration C1 in a work day or a work week.

2. The time-weighted average exposure shall be calculated by dividing the cumulative daily exposure by eight and the weekly exposure by 40 respectively.

5. Short-term exposures to the designated substance in any 15-minute period are determined from a single sample or from a time-weighted average of sequential samples taken during that period.

## PART II

### COKE OVEN EMISSIONS CONTROL PROGRAM – ADDITIONAL ELEMENTS

#### A. Engineering Controls

##### 1. Charging

1. The charging operation shall be conducted in one of the following ways:

1. Stage charging.

2. Sequential charging.

3. Pipeline charging of preheated coal.

4. Chain conveyor charging of preheated coal.

2. During the charging operation, provision shall be made for the following engineering controls:

1. Drafting from two or more points of the oven chamber by,

i. a double collecting main,

ii. a jumper pipe on the larry car or oven top, or

iii. a separate charging main attached to the larry car.

2. A functional steam aspiration system.

3. Adjustable volumetric controls on the larry car hoppers to provide the appropriate quantity of coal to be charged so as to ensure an adequate free space for gas evacuation.

4. Stainless steel hopper liners, mechanical vibrators or pneumatic stimulators to allow the proper flow of coal into the oven chamber.

5. Gooseneck and standpipe cleaners as is appropriate in the circumstances.

6. A leveller bar seal to the chuck door opening.

7. Carbon cutter or compressed air roof decarbonization on the pusher ram.

##### 2. Coking

1. During the coking operation, provision shall be made for the following engineering controls:

1. Backpressure control on each battery to ensure uniform collector main pressure.

2. An adequate number of spare doors readily available and in good condition for the replacement of leaking doors when such replacement is appropriate in the circumstances.

3. Chuck door gaskets or sealing material to be used when such use is appropriate in the circumstances.

#### B. Work Practices

##### 1. Charging

1. During the charging operation, provision shall be made for the following work practices:

1. Inspection and cleaning of goosenecks and standpipes prior to each charge to provide an appropriate open area for the passage of gases from the oven to the collecting main.

2. Inspection and, when appropriate in the circumstances, the removal of roof carbon so as to ensure an adequate free space above the coal charge to allow for the passage of gases to the off-take system.

3. Routine inspection of the steam aspiration system.

4. Routine inspection of the flushing liquor sprays.

5. Cleaning and sealing of standpipe caps as is appropriate in the circumstances.

6. Filling of the larry car hoppers with an appropriate quantity of coal.

7. Alignment of the larry car at the oven so that the drop sleeves fit tightly over the charging holes.

8. Charging of the coal into the oven using the proper sequence for the type of charging operation utilized.

9. The aspiration system to be turned off only when the charging holes have been closed.

##### 2. Coking

1. During the coking operation, provision shall be made for the following work practices:

1. Repair, replacement or adjustment of oven doors and chuck doors, as well as maintenance of door jambs, as is appropriate in the circumstances, to provide a gas tight fit.

2. Clean oven doors, chuck doors and door jambs between each coking cycle to provide a gas tight fit.

3. An inspection system and a corrective action program to control door and top side emissions.

##### 3. Pushing

1. During the pushing operation, provision shall be made for the following work practices:

1. Coke spillage to be cleaned up after each push.

2. Coal spillage on the bench to be collected in the bin on the pusher machine.

3. Coal charge to be heated as uniformly as possible for the set time period before pushing.

4. Heating maintenance to be performed to provide heating which is as uniform as possible.

#### 4. Maintenance and Repair

1. In order to ensure adequate maintenance and repair, provision shall be made for the following work practices:

1. Regular inspection of all engineering controls which have been installed to decrease coke oven emissions and effective implementation of all necessary repairs thereto.
2. Regular inspection of battery function and prompt and effective implementation of necessary repairs thereto.

#### C. Hygiene Facilities

1. Provision shall be made for the following hygiene facilities:

1. Positive pressure, temperature controlled, filtered air for the larry car, pusher machine, door machine and quench car cabs.
2. Positive pressure, temperature controlled, filtered air rest areas for workers.

O. Reg. 490/09, Sched. 1.

#### Schedule 2

#### PART I CODES FOR MEASURING AIRBORNE SUBSTANCES

1. Code for Measuring Airborne Acrylonitrile dated October 30, 1984, and issued by the Ministry.
2. Code for Measuring Airborne Arsenic dated March 22, 1986, and issued by the Ministry.
3. Code for Measuring Coke Oven Emissions dated June 30, 1982, and issued by the Ministry.
4. Code for Measuring Airborne Ethylene Oxide dated February 28, 1986 and issued by the Ministry.
5. Code for Measuring Airborne Isocyanates dated June 17, 1983, and issued by the Ministry.

#### PART II CODES FOR MEDICAL SURVEILLANCE

1. Code for Medical Surveillance of Acrylonitrile Exposed Workers dated October 30, 1984, and issued by the Ministry.
2. Code for Medical Surveillance of Asbestos Exposed Workers dated July 19, 1982 and issued by the Ministry.
3. Code for Medical Surveillance of Benzene Exposed Workers dated October 29, 1984, and issued by the Ministry.
4. Code for Medical Surveillance of Workers Exposed to Coke Oven Emissions dated June 30, 1982, and issued by the Ministry.
5. Code for Medical Surveillance of Isocyanates Exposed Workers dated June 17, 1983, and issued by the Ministry.

6. Code for Medical Surveillance of Silica Exposed Workers dated October 17, 1983, and issued by the Ministry.
7. Code for Medical Surveillance for Lead dated May 28, 1981 and issued by the Ministry.
8. Code for Medical Surveillance for Mercury dated November 16, 1981, and issued by the Ministry.
9. Code for Medical Surveillance for Vinyl Chloride dated January 11, 1982, and issued by the Ministry.

### PART III

#### CODE FOR RESPIRATORY EQUIPMENT

1. Code for Respiratory Equipment for Acrylonitrile dated October 30, 1984, and issued by the Ministry.
  2. Code for Respiratory Equipment for Arsenic dated March 22, 1986, and issued by the Ministry.
  3. Code for Respiratory Equipment for Asbestos dated June 30, 2000 and issued by the Ministry.
  4. Code for Respiratory Equipment for Benzene dated June 30, 2000 and issued by the Ministry.
  5. Code for Respiratory Equipment for Coke Oven Emissions dated June 30, 1982, and issued by the Ministry.
  6. Code for Respiratory Equipment for Ethylene Oxide dated February 28, 1986 and issued by the Ministry.
  7. Code for Respiratory Equipment for Isocyanates dated June 17, 1983, and issued by the Ministry.
  8. Code for Respiratory Equipment for Lead dated June 30, 2000, and issued by the Ministry.
  9. Code for Respiratory Equipment for Mercury dated June 30, 2000, and issued by the Ministry.
  10. Code for Respiratory Equipment for Silica dated June 30, 2000 and issued by the Ministry.
  11. Code for Respiratory Equipment for Vinyl Chloride dated June 30, 2000, and issued by the Ministry.
- O. Reg. 490/09, Sched. 2.