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## Occupational Health and Safety Act

### R.R.O. 1990, REGULATION 842

*Amended to O. Reg. 108/04*

#### DESIGNATED SUBSTANCE — ISOCYANATES

**Notice of Currency:**\* This document is up to date.

\*This notice is usually current to within two business days of accessing this document. For more current amendment information, see the [Table of Regulations – Legislative History Overview](#).

*This is the English version of a bilingual regulation.*

**1.** In this Regulation,

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

“joint health and safety committee” includes a joint health and safety committee established under section 9 of the Act, a committee of like nature and the workers or their representatives who participate in an arrangement, program or system conforming to subsection 9 (4) of the Act. (“comité mixte sur la santé et la sécurité”) R.R.O. 1990, Reg. 842, s. 1.

**2.** Isocyanates are prescribed as designated substances. R.R.O. 1990, Reg. 842, s. 2.

**3. (1)** Subject to subsection (3), this Regulation applies to every employer and worker at a workplace where isocyanates are produced, used, handled or stored and at which the worker is likely to inhale isocyanates or where isocyanates may come into contact with the worker. R.R.O. 1990, Reg. 842, s. 3 (1).

**(2)** Subject to subsection (3), an employer to whom this Regulation applies shall take every precaution reasonable in the circumstances to ensure that every worker who is not an employee of the employer but who is working in the workplace of the employer and is exposed to isocyanates and whose health is likely to be affected thereby is protected and the worker shall comply with the requirements of the employer. R.R.O. 1990, Reg. 842, s. 3 (2).

**(3)** Subsection (2) and sections 4 to 18 do not apply to a constructor, an employer who is carrying out a project or a worker working on or at a project. R.R.O. 1990, Reg. 842, s. 3 (3).

**4. (1)** Every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities to ensure that the time-weighted average exposure of a worker to toluene diisocyanate ( TDI), methylene bisphenyl isocyanate ( MDI), hexamethylene 1,6-diisocyanate ( HDI) or isophorone diisocyanate ( IPDI) is reduced to the lowest practical level and in any case shall not exceed 0.005 parts of the isocyanate per million parts of air by volume or 0.2 micromoles of the isocyanate per cubic metre of air. R.R.O. 1990, Reg. 842, s. 4 (1).

**(2)** Despite subsection (1), an employer shall ensure that the exposure of a worker to

toluene diisocyanate ( TDI), methylene bisphenyl isocyanate ( MDI), hexamethylene 1,6-diisocyanate ( HDI) or isophorone diisocyanate ( IPDI) shall not exceed 0.02 parts of the isocyanate per million parts of air by volume or 0.8 micromoles of the isocyanate per cubic metre of air in any period of time. R.R.O. 1990, Reg. 842, s. 4 (2).

(3) Subject to subsection (7), every employer shall comply with subsections (1) and (2) without requiring a worker to wear and use respiratory equipment. R.R.O. 1990, Reg. 842, s. 4 (3).

(4) The time-weighted average exposure of a worker to the isocyanates mentioned in subsection (1) shall be calculated in accordance with the Schedule and the result of the calculation of the exposure may be certified by an inspector. R.R.O. 1990, Reg. 842, s. 4 (4).

(5) Every worker shall work in compliance with the work practices and hygiene practices in accordance with the provisions of the isocyanates control program. R.R.O. 1990, Reg. 842, s. 4 (5).

(6) On a prosecution for a failure to comply with subsection (1) or (2), it shall be a defence for an employer to prove that the employer has complied with subsection (1) or (2) and that a breach of subsection (1) or (2) occurred solely because a worker failed to work in compliance with the work practices and hygiene practices in accordance with the provisions of the isocyanates control program and the employer has taken every precaution reasonable in the circumstances to require the worker to do so. R.R.O. 1990, Reg. 842, s. 4 (6).

(7) Where the strict duty imposed by subsection (1) or (2) cannot be complied with because,

- (a) an emergency exists; or
- (b) the measures and procedures necessary to control the exposure of a worker to the airborne isocyanates,
  - (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,

the employer shall provide a worker with respiratory equipment which shall be used by the worker. R.R.O. 1990, Reg. 842, s. 4 (7).

5. With respect to isocyanates other than those referred to in subsections 4 (1) and (2), every 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 and the worker shall use and wear the same. R.R.O. 1990, Reg. 842, s. 5.

6. (1) Where respiratory equipment is provided by an employer and used by a worker, the respiratory equipment shall be appropriate in the circumstances for the concentration of

isocyanates and shall meet or exceed the requirements set out in the *Code for Respiratory Equipment for Isocyanates* dated the 17th day of June, 1983, and issued by the Ministry. R.R.O. 1990, Reg. 842, s. 6 (1).

(2) The employer shall provide training and instruction to a worker in the proper care and use of respiratory equipment provided by the employer. R.R.O. 1990, Reg. 842, s. 6 (2).

7. (1) Every employer to whom this Regulation applies shall cause an assessment to be made in writing of the exposure or likelihood of exposure in a workplace of a worker to the inhalation of isocyanates or contact with isocyanates. R.R.O. 1990, Reg. 842, s. 7 (1).

(2) In causing the assessment to be made, the employer shall consider and take into account such matters as,

- (a) the methods and procedures used or to be used in the production, processing, use, handling or storage of isocyanates;
- (b) the extent and potential extent of the exposure of a worker to the inhalation of or contact with isocyanates; and
- (c) the measures and procedures necessary to control such exposure by means of engineering controls, work practices and hygiene practices and facilities. R.R.O. 1990, Reg. 842, s. 7 (2).

(3) In causing the assessment to be made, the employer shall consult thereon with the joint health and safety committee and the committee may make recommendations with respect to the assessment. R.R.O. 1990, Reg. 842, s. 7 (3).

(4) A copy of the assessment made by an employer shall be given by the employer to each member of the joint health and safety committee. R.R.O. 1990, Reg. 842, s. 7 (4).

8. (1) Where the assessment discloses or would, if made in conformity with section 7, disclose that a worker is likely to inhale or come into contact with isocyanates and that the health of the worker may be affected thereby, the employer shall develop, establish, put into effect and maintain measures and procedures to control the exposure of the worker to isocyanates and shall incorporate the same into an isocyanates control program. R.R.O. 1990, Reg. 842, s. 8 (1).

(2) The isocyanates control program shall include provisions for,

- (a) engineering controls, work practices and hygiene practices and facilities to control the exposure of a worker to isocyanates;
- (b) methods and procedures to monitor the concentrations of airborne isocyanates referred to in subsections 4 (1) and (2) in the workplace and the exposure of a worker thereto;
- (c) personal records of the exposure of a worker to the isocyanates referred to in subsections 4 (1) and (2) at the workplace including the time-weighted average exposure of the worker and of the concentrations of isocyanates and the times in which such concentrations were taken to be representative of the exposure of the worker and used in calculating the average exposure to be maintained by the employer;

- (d) personal records of the length of time workers are taken to be exposed to isocyanates other than those referred to in subsections 4 (1) and (2);
- (e) medical examinations and clinical tests of a worker;
- (f) records of medical examinations and clinical tests of a worker to be maintained by a physician who has examined the worker or under whose direction the clinical tests have been performed; and
- (g) a training program for supervisors and workers on the health effects of isocyanates and the measures and procedures required under the isocyanates control program. R.R.O. 1990, Reg. 842, s. 8 (2).

**(3)** In developing the measures and procedures mentioned in subsection (1) and the isocyanates control program, the employer shall consult with the joint health and safety committee and the committee may make recommendations with respect thereto. R.R.O. 1990, Reg. 842, s. 8 (3).

**9.** Where a change is made in a process involving isocyanates, or in the methods and procedures in the production, use, handling or storage of isocyanates and the change could result in a significant difference in the exposure of a worker to the inhalation of or contact with isocyanates, the employer shall cause a further assessment to be made forthwith and the provisions of sections 7 and 8 apply to the further assessment. R.R.O. 1990, Reg. 842, s. 9.

**10. (1)** Where disputes arise between an employer and a joint health and safety committee, as to an assessment required under section 7 or 9 or as to the measures and procedures mentioned in subsection 8 (1) or the isocyanates control program or its provisions required under section 8 or 9, the employer, a member of the joint health and safety committee or the committee may notify an inspector thereof who shall investigate and give a decision in writing to the employer, the member or committee. R.R.O. 1990, Reg. 842, s. 10 (1).

**(2)** Nothing in subsection (1) applies so as to affect the power of an inspector to issue an order for a contravention of this Regulation. R.R.O. 1990, Reg. 842, s. 10 (2).

**11. (1)** A copy of the isocyanates control program put into effect by the employer shall be given by the employer to each member of the joint health and safety committee and the employer shall acquaint every worker affected by the isocyanates control program with its provisions. R.R.O. 1990, Reg. 842, s. 11 (1).

**(2)** A copy of the isocyanates control program put into effect by the employer shall be made available by the employer in English and in the majority language of the workplace. R.R.O. 1990, Reg. 842, s. 11 (2).

**12.** Subject to section 18, the procedures for monitoring, sampling and determining the concentrations of airborne isocyanates in the atmosphere of a workplace and the exposure of a worker thereto shall be those set out in the Code for Measuring Airborne Isocyanates dated the 17th day of June, 1983, and issued by the Ministry. R.R.O. 1990, Reg. 842, s. 12.

**13.** The results of monitoring the concentrations of airborne isocyanates in the workplace and the exposure of a worker thereto as provided by the isocyanates control program shall be,

- (a) posted forthwith by the employer, as soon as the results are available, in a

conspicuous place or places at the workplace where they are most likely to come to the attention of the workers affected thereby, for a period of at least fourteen days;

(b) furnished to the joint health and safety committee; and

(c) kept by the employer for a period of at least five years. R.R.O. 1990, Reg. 842, s. 13.

**14. (1)** A worker shall, at the expense of the employer, undergo the medical examinations and clinical tests required under the isocyanates control program. R.R.O. 1990, Reg. 842, s. 14 (1).

(2) The medical examinations and clinical tests required under the isocyanates control program shall make provision for,

(a) pre-employment and pre-placement medical examinations to include,

(i) a medical history,

(ii) a physical examination, and

(iii) clinical tests including posteroanterior chest x-ray and pulmonary function tests, as required by the examining physician; and

(b) periodic medical examinations and clinical tests consisting of the items prescribed by clause (a). R.R.O. 1990, Reg. 842, s. 14 (2).

(3) The medical history, physical examination and clinical tests shall meet the provisions of the Code for Medical Surveillance of Isocyanates Exposed Workers dated the 17th day of June, 1983, and issued by the Ministry. R.R.O. 1990, Reg. 842, s. 14 (3).

**15. (1)** The records of the exposures of each worker to airborne isocyanates at the workplace to be maintained as provided by the isocyanates control program shall identify the worker, including the worker's date of birth, the worker's jobs or occupations at the workplace, the results of monitoring for exposure to airborne isocyanates in the worker's work area and the use by the worker of respiratory equipment and its type. R.R.O. 1990, Reg. 842, s. 15 (1).

(2) The employer shall provide a copy of the records of the exposures of the worker to airborne isocyanates as provided by the isocyanates control program to the physician who examines the worker and under whose supervision the clinical tests of the worker are performed. R.R.O. 1990, Reg. 842, s. 15 (2).

**16. (1)** The records of medical examinations and clinical tests of a worker obtained and made under this Regulation and of the exposures of the worker to airborne isocyanates furnished by the employer under subsection 15 (2) shall be kept in a secure place by the physician who has conducted the examinations and tests or under whose supervision the examinations and tests have been made for the longer of,

(a) the period of forty years from the time such records were first made;

(b) the period of twenty years from the time the last of such records were made. R.R.O. 1990, Reg. 842, s. 16 (1).

(2) Where the physician is no longer able or willing to keep the records, the records shall be forwarded to the Provincial Physician, Ministry of Labour, or to a physician designated by

the Provincial Physician and the provisions of subsection (1) shall, with necessary modifications, apply thereto. R.R.O. 1990, Reg. 842, s. 16 (2); O. Reg. 518/92, s. 1.

**17. (1)** The physician conducting the physical examination or clinical tests or under whose supervision the examination or tests are made shall advise the employer, who shall act thereon, and the worker whether the worker, because of a condition resulting from the inhalation of or contact with isocyanates, is fit with limitations or unfit for work in isocyanates exposure without giving nor disclosing to the employer the records or results of the examination or tests, and in advising that the worker is fit with limitations or unfit, the physician shall be governed by the provisions of the Code for Medical Surveillance of Isocyanates Exposed Workers referred to in subsection 14 (3). R.R.O. 1990, Reg. 842, s. 17 (1).

**(2)** Where a worker is removed from exposure to isocyanates because a physical examination or clinical test discloses that the worker may have or has a condition resulting from inhalation of or contact with isocyanates and 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. R.R.O. 1990, Reg. 842, s. 17 (2); O. Reg. 108/04, s. 1.

**(3)** Upon advising the employer and the worker that a worker is fit with limitations or unfit for work in isocyanates exposure the physician shall advise in writing upon a confidential basis the joint health and safety committee thereof and in giving such advice shall indicate his or her opinion as to the interpretation to be placed thereon. R.R.O. 1990, Reg. 842, s. 17 (3).

**(4)** Copies of the exposure records and the records and results of physical examinations and clinical tests of a worker shall be given by the physician conducting the examination or tests,

(a) to the worker or the worker's physician upon the request in writing of the worker; and

(b) in the case of a deceased worker, to the next of kin or personal representative of the worker, upon the request in writing of such next of kin or personal representative,

and any authorization of another person by the worker or the worker's next of kin or personal representative is of no effect. R.R.O. 1990, Reg. 842, s. 17 (4).

**(5)** Where the physician advises the employer that a worker, because of a condition resulting from exposure to isocyanates, is fit with limitations or is unfit for work in isocyanates exposure, the physician shall forthwith communicate such advice to the Provincial Physician, Ministry of Labour. R.R.O. 1990, Reg. 842, s. 17 (5); O. Reg. 518/92, s. 2.

**18.** 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. R.R.O. 1990, Reg. 842, s. 18.

## SCHEDULE

The time-weighted average exposure of a worker to airborne isocyanates referred to in subsection 4 (1) shall be calculated for a forty-hour week and an eight-hour day as follows:

1. The average concentrations of isocyanates to which a worker is exposed shall be determined from analyses of air samples representative of the exposure of the worker to isocyanates during work operations as set out in the Code mentioned in section 12.
2. The results of analyses are the concentrations expressed as parts of isocyanates per million parts of air by volume or as micromoles of isocyanates per cubic metre of air.
3. The concentrations shall be multiplied by the time in hours to which the worker is taken to be exposed to such concentrations.
4. The weekly exposure shall be calculated as follows:

$$C_1T_1 + C_2T_2 + \dots + C_nT_n = \text{cumulative weekly exposure}$$

where,

$C_1$  is the concentration found in an air sample, and

$T_1$  is the total time in hours to which the worker is taken to be exposed to concentration  $C_1$  in a week.

5. The weekly time-weighted average exposure shall be calculated by dividing the cumulative weekly exposure by 40.
6. The daily exposure shall be calculated as follows:

$$C_1T_1 + C_2T_2 + \dots + C_nT_n = \text{cumulative daily exposure}$$

where,

$C_1$  is the concentration found in an air sample, and

$T_1$  is the total time in hours to which the worker is taken to be exposed to concentration  $C_1$  in a day.

7. The daily time-weighted average exposure shall be calculated by dividing the cumulative daily exposure by 8.

R.R.O. 1990, Reg. 842, Sched.

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