

CANADA LABOUR CODE
PART II
OCCUPATIONAL SAFETY AND HEALTH

Review under section 146 of the Canada Labour Code, Part II
of a direction issued by a safety officer

Applicant: Air Canada
Thunder Bay Airport
Thunder Bay, Ontario
Represented by: Louise-Hélène Sénécal, Attorney

Respondent: International Association of Machinists
& Aerospace Workers (IAMAW)
Airline Lodge 714
Winnipeg, Manitoba
Represented by: Rick Vezina

Mis en cause: Helen Kosola
Safety officer #275
Human Resources Development Canada

Before: Serge Cadieux
Regional Safety Officer
Human Resources Development Canada

This case proceeded by way of written submissions. The safety officer's investigation report and the written submissions entered into evidence by Air Canada were deemed sufficient by Mr. Rick Vezina of the International Association of Machinists & Aerospace Workers (IAMAW).

Background

In her narrative report, the safety officer explained that her visit to the Thunder Bay Airport on January 21, 1996 was part of a national program to check procedures for aircraft deicing. She had discussions on that topic with employees of Air Canada. She also obtained from Mr. René Gauthier, Manager, Customer Service Operation Control, Prairies, copies of the company's aircraft deicing procedures and training program. The safety officer was made aware, by Mr. Gauthier, that at Thunder Bay, the employees have two choices for respirators; a disposable mask or a half-face mask with cartridge. She advised Mr. Gauthier that to her knowledge, the disposable dust/mist respirator may not be acceptable protection.

On March 7, 1996 the safety officer received confirmation from her Technical Advisor, occupational safety and health, that on the basis of a material safety data sheet (MSDS) from "Meakin MGR-EMP Safety" for ethylene glycol, the use of a disposable dust/mist face mask is not recognized and only the half-face mask cartridge-type respirator referenced in the MSDS should be used. On a subsequent visit to Air Canada's work site at Thunder Bay airport, the safety officer confirmed that employees preferred to use and were using the disposable dust/mist respirator (3M 9925) although the Scott half-face cartridge-type respirator was available.

In a conversation with Mr. Gauthier, the safety officer was informed that Air Canada had finally obtained the supplier's MSDS for the de-icing fluid used by employees. On May 20, 1996, the safety officer met with company and union representatives and had discussions about the type of respirators used and the concern that half-face mask respirators may affect radio communications between deicing crew members. A review of some sections of the MSDS also took place. The group reviewed the sections dealing with INHALATION, EFFECTS OF REPEATED OVEREXPOSURE, and the section about RESPIRATORY PROTECTION. That latter section specified the type of breathing apparatus recommended for exposure to ethylene glycol:

NIOSH or MSHA approved breathing air equipment or face mask with organic vapour cartridge and dust or mist pre-filter

In a further section of the MSDS, under Special Precautions, the following could be read:

Prolonged or repeated breathing of mist or vapour is harmful. Causes irritation. Causes birth defect in laboratory animals. May cause kidney and nervous system damage.

On the basis of the above information and the fact that employees were using disposable masks during deicing operations with ethylene glycol, the safety officer concluded that Air Canada was in violation of section 12.7 of Part XII (Safety Materials, Equipment, Devices and Clothing) of the Canada Occupational Safety and Health Regulations (hereafter the Regulations). According to the safety officer, the disposable dust/mist respirators identified as "3M Dust Fume Mist Mask TC RK 348 No. 9925" were not specified in the MSDS for ethylene glycol, and therefore did not meet the intent of the Regulations. A direction (see Appendix) was issued under subsection 145(1) of the Canada Labour Code, Part II (hereafter the Code) to Air Canada. Air Canada was directed to terminate the contravention no later than March 22, 1996.

Submission for the Employer

The detailed submission of Air Canada is on record. In the written submission sent to the Regional Safety Officer, Ms. Sénécal adopted the following position:

"Air Canada considers that it does not contravene any of the dispositions of the Canada Labour Code, Part II or of its regulations and that the Safety Officer's order should be reviewed for the following reasons:

1. - There are no hazards of an airborne hazardous substance or an oxygen deficient atmosphere in the work place in question.

2. - A survey entitled "Assessment of Ethylene Glycol Exposure Among Aviation Workers, Montréal International Airport, conducted by France de Repentigny, CIHT for Human Resources Development Canada for January to March 1995 revealed there are no dangers of exposure to hazardous substances for deicing workers, performing the same tasks as those accomplished at the Thunder Bay work place.
3. - A research requested by Air Canada and prepared by the "Département de médecine du travail et d'hygiène du milieu, Faculté de médecine, de l'Université de Montréal" in December of 1993 came to the same conclusions.
4. - A decision by Serge Cadieux, Regional Safety Officer, on October 21, 1991 in the matter of the review under section 146 of the Canada Labour Code of a directive by safety officer Ron Thibault pursuant to similar circumstances as the one at hand concluded that "the direction given to Air Canada was not substantiated by the safety officer in this case" and that "Air Canada employees working with ethylene glycol deicing products are not in a situation of danger".
5. - Air Canada reserves its rights to present additional arguments at the hearing and/or in its written submission;

Decision

The direction is issued under the authority of subsection 145(1) of the Code. The direction was issued in the context of "a national program to check procedures for aircraft deicing" and not as a result of a complaint of one or several employees alleging that their safety and health is being affected by exposure to the deicing fluid. The issue to be decided in this case is therefore whether Air Canada is in contravention of section 12.7 of the Regulations for allowing its employees to use disposable dust/mist respirators during deicing operations. The description of the contravention given by the safety officer in the direction reads as follows:

1. Paragraph 125(v) of the Canada Labour Code, Part II, and section 12.7 of the Canada Occupational Safety and Health Regulations.

Information provided by Air Canada to Human Resources Development Canada Labour Program regarding deicing procedures indicates that employees engaged in aircraft deicing may use disposable dust/mist respirators. This is contrary to the Material Safety Data Sheet for the deicing fluid ethylene glycol.

The provisions of interest are paragraph 125(v) of the Code which provides:

125 Without restricting the generality of section 124, every employer shall, in respect of every work place controlled by the employer,

(v) ensure that every person granted access to the work place by the employer is familiar with and uses in the prescribed circumstances and manner all prescribed safety materials, equipment, devices and clothing; and subsection 12.7(1) of the Regulations which provides:

12.7(1) Where there is a hazard of an airborne hazardous substance or an oxygen deficient atmosphere in a work place, the employer shall provide a respiratory protective device that is listed in the NIOSH Certified Equipment List as of October 1, 1984, dated February, 1985, published by the National Institute for Occupational Safety and Health.

The definition of "hazardous substance" as well as sections 10.2, 10.21 and 12.1 of the Regulations will be considered in the decision since they impact on the issue to be decided in this case. The reason for this is that paragraph 125(v) of the Code establishes the obligation on the employer to determine, in the context of this case, the circumstances where respiratory protection equipment is required. Subsection 10.21(1) and section 12.1 of the Regulations prescribe the circumstances where personal protective equipment must be used. That is, if a hazard of an airborne hazardous substance or an oxygen deficient atmosphere in a work place exists that cannot be controlled within safe limits, then the employer must ensure the appropriate respiratory protection is used. Section 12.7 of the Regulations, on the other hand, prescribes the type of respiratory protection equipment to be used and how they are to be fitted, cared for, used and maintained. The presence of an oxygen deficient atmosphere is not an issue in this case and will be set aside for the purpose of deciding this case.

The expression "hazardous substance" is defined at subsection 122(1) of the Code. It reads as follows:

"hazardous substance" includes a controlled product and a chemical, biological or physical agent that, by reason of a property that the agent possesses, is hazardous to the safety or health of a person exposed to it;

There is no doubt that ethylene glycol is both a controlled product and a substance that can be hazardous to the safety and health of a person exposed to it. By virtue of its properties, ethylene glycol is subject to the requirements of Part X (Hazardous Substances) of the Regulations. In order to assert that subsection 12.7(1) of the Regulations does not apply to the situation under consideration, the employer must show that the hazardous substance used i.e. ethylene glycol, will not or is not likely to endanger the safety and health of his/her employees during deicing operations. This can only be achieved by carrying out the hazard investigation under section 10.2 of the Regulations to determine whether the safety and health of employees working with the substance is or is likely to be endangered by exposure to the substance. Section 10.2(2); 10.2 of the Regulations specify the criteria that must be taken into consideration to make that determination. Section 10.2 of the Regulations provides the following:

10.2(1) Where there is a likelihood that the safety or health of an employee in a work place is or may be endangered by exposure to a hazardous substance, the employer shall, without delay,

- (a) appoint a qualified person to carry out an investigation; and
- (b) notify the safety and health committee or safety and health representative, if either exists, of the proposed investigation and of the name of the qualified person appointed to carry out that investigation.

(2) In the investigation referred to in subsection (1), the following criteria shall be taken into consideration:

- (a) the chemical, biological and physical properties of the hazardous substance;
- (b) the routes of exposure of the hazardous substance;
- (c) the effects to health of exposure to the hazardous substance;
- (d) the quantity of the hazardous substance handled;
- (e) the manner in which the hazardous substance is handled;
- (f) the control methods used to eliminate or reduce exposure;
- (g) the value, percentage or level of the hazardous substance to which an employee is likely to be exposed; and
- (h) whether the value, percentage or level referred to in paragraph (g) is likely to
 - (i) exceed that prescribed in section 10.21 or 10.22 or Part VII, or
 - (ii) be less than that prescribed in Part VI.

The above criteria should be read as a whole and in the context of the deicing operation. A decision as to whether exposure to ethylene glycol vapours and mists will or will not endanger the safety and health of employees engaged in deicing operations can then be reached. However, the decision can only be reached after determining whether the concentration of ethylene glycol prescribed by section 10.21 of the Regulations, as specified by subparagraph 10.2(2)(h)(i) above, is or is likely to be exceeded. Of particular relevance in this case is the concentration prescribed by paragraph 10.21(1)(a) of the Regulations. It provides:

10.21 (1) No employee shall be exposed to a concentration of

- (a) an airborne chemical agent, other than grain dust, in excess of the value for that chemical agent adopted by the American Conference of Governmental Industrial Hygienists in publication entitled Threshold Limit Values and Biological Exposure Indices for 1985-86;

The American Conference of Governmental Industrial Hygienists (ACGIH) explains in its publication noted above that Threshold Limit Values (TLVs) refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects (emphasis added). Since the situation under consideration applies to all Air Canada deicing crews, given that the investigation of the safety officer was carried out as part of a national program, the above explanation is quite pertinent in this case. By adopting the TLVs, the legislator recognizes that the health of employees

working with a hazardous substance suffers no adverse effects or, to put it in other words, is not endangered by exposure to that substance as long as the concentration of that substance in the air does not exceed the concentration prescribed.

In 1985-86, the threshold limit value (TLV) for ethylene glycol was 50 ppm (parts per million) or 125 mg/m³ (milligrams per cubic meter). The TLV for this substance is followed by a ceiling notation and reads TLV-C which means "Threshold Limit Value-Ceiling -- the concentration that should not be exceeded during any part of the working exposure. " The rationale given by the American Conference of Governmental Industrial Hygienists (ACGIH) for the ceiling notation is that ethylene glycol is an irritant. ACGIH states that "a TLV-Ceiling of 50 ppm, for mist and vapour combined, is recommended to minimize irritation of the respiratory passages. "Therefore, excursions above the concentration of 50 ppm (or 125 mg/m³) of ethylene glycol are not allowed under any working conditions.

Two surveys were introduced by Air Canada as evidence that it was not endangering the safety and health of its employees engaged in deicing operations. The first survey entitled "Assessment of Ethylene Glycol Exposure Among Aviation Workers, Montreal International Airport", which was carried out by officials of this Department, covered the criteria specified by subsection 10.2(2) of the Regulations. In conclusion, the study finds that employees carrying out deicing operations with ethylene glycol were not overexposed to the substance. The results show that all samples taken under specific conditions prevailing at the time of the survey "indicate values below the prescribed TLV-C of 125 mg/m³". A second survey entitled "Projet de recherche sur l'exposition des travailleurs de l'aviation à l'éthylène glycol", which was carried out on behalf of Air Canada by the "Département de médecine du travail et d'hygiène du milieu, Faculté de médecine, de l'Université de Montréal in December of 1993, essentially came to the same conclusion. Employees carrying out deicing operations are not exposed to an excessive amount of ethylene glycol. Evidently, the safety and health of Air Canada deicing crews was not being endangered by exposure to ethylene glycol under the conditions prevailing at the time of the surveys.

Although it has been established that exposure to ethylene glycol does not exceed safe limits during deicing operations, both studies nonetheless recommend some form of respiratory protection to protect employees against ethylene glycol mists and vapours. I believe that such a recommendation is appropriate in the circumstances of this case given that ethylene glycol is a known irritant. Furthermore, the recommendation satisfies the criterion found at paragraph 10.2(2)(f) of the Regulations above.

The study conducted by this Department concludes the following:

"In conclusion, exposure to ethylene glycol was below the threshold limit value-ceiling of 127 mg/m³. As a preventive measure, however, since variables such as wind direction, temperature and type of deicing liquid may influence basket operator exposure, these employees should continue to wear NIOSH certified respiratory protective devices with a 5X safety factor as a preventive measure. "

Air Canada provides its employees with NIOSH certified disposable half-mask with a 5X safety factor to protect against dust and mist. However, the MSDS referred to by the safety officer recommends the use of NIOSH-approved "breathing air equipment or face mask with organic vapour cartridge and dust or mist pre-filter" regardless that exposure to the hazardous substance is excessive or not. In my opinion, that ladder recommendation would only be mandatory, where a large population of workers is considered as in the instant case, if it has not been established that exposure to the hazardous substance does not exceed the prescribed exposure limits. This was not the case before the safety officer at the time of her investigation given the studies that had been carried out by both the employer and by this Department, not to mention the decision I had rendered in a similar case and which was submitted as evidence by Air Canada. In my opinion, Air Canada is complying with both the spirit and the letter of the law.

I would add the following comment in this case. There are a number of variables which may influence the exposure of employees to ethylene glycol. For example, the study conducted by officials of this Department mentioned wind direction, temperature and type of deicing liquid as such variables. There may be other variables as well. The criteria considered in the context of the study conducted by this Department were specific to the Montreal International Airport at Dorval, Québec. It is quite possible that the conditions or procedures prevailing at the Toronto airport, or any other airport for that matter, are significantly different. However, to claim that employees using deicing fluid are overexposed to vapours and mists of ethylene glycol and that, as a consequence, their health is being adversely affected would require that the claim be substantiated since there now exists abundant evidence to support the opposite.

In light of the evidence adduced in this case, I find that the direction given by the safety officer is not justified. It has been established that Air Canada employees engaged in deicing operations are not overexposed to ethylene glycol and, as such, are not likely to be endangered by exposure to that substance. I also find that Air Canada is supplying its employees, as a preventive measure, with appropriate respiratory protection that reduces exposure to ethylene glycol, a known irritant. For all the above reasons, I HEREBY RESCIND the direction given under subsection 145(1) of the Code on March 22, 1996 by safety officer Helen Kosola to Air Canada.

Decision rendered on August 30, 1996

Serge Cadieux
Regional Safety Officer

IN THE MATTER OF THE CANADA LABOUR CODE
PART II - OCCUPATIONAL SAFETY AND HEALTH

DIRECTION TO THE EMPLOYER UNDER SUBSECTION 145(1)

On March 22, 1996, the undersigned safety officer conducted an inquiry in the workplace operated by Air Canada, being an employer subject to the Canada Labour Code, Part II, at 100 Princess Street, Thunder Bay Airport, Thunder Bay, Ontario, the said workplace being sometimes known as Air Canada.

The said safety officer is of the opinion that the following provision of the Canada Labour Code, Part II, is being contravened:

1. Paragraph 125(v) of the Canada Labour Code, Part II, and section 12.7 of the Canada Occupational Safety and Health Regulations.

Information provided by Air Canada to Human Resources Development Canada Labour Program regarding deicing procedures indicates that employees engaged in aircraft deicing may use disposable dust/mist respirators. This is contrary to the Material Safety Data Sheet for the deicing fluid ethylene glycol.

Therefore, you are **HEREBY DIRECTED**, pursuant to subsection 145(1) of the Canada Labour Code, Part II, to terminate the contravention no later than March 22, 1996.

Issued at Thunder Bay, this 22nd day of March 1996.

Helen Kosola,
Safety Officer #275

To: Air Canada
2000 Wellington Avenue
Box 768
Winnipeg, Manitoba R3C 2N2

SUMMARY OF REGIONAL SAFETY OFFICER DECISION

Applicant: Air Canada

Respondent: International Association of Machinists and Aerospace Workers

KEYWORDS

Ethylene glycol, deicing, material safety data sheet (MSDS), surveys, hazardous substance, ACGIH TLV.

PROVISIONS

Code: 122(1), 125(v), 145(1)
COSH Regs: 10.2, 10.21, 12.1, 12.7(1)

SUMMARY

A safety officer gave a direction to Air Canada because the company was allowing its employees to use disposable dust/mist respirators during deicing operations. The safety officer was of the view that this was contrary to the MSDS for the deicing fluid ethylene glycol. The employer was found to be in contravention of subsection 12.7(1) of the Regs which require the use of NIOSH approved air breathing equipment.

The Regional Safety Officer disagreed with the safety officer. Surveys had been conducted by Air Canada and by Human Resources Development Canada officials which indicated that deicing crews were not exposed to an excessive amount of ethylene glycol. Therefore, the Regional Safety Officer concluded that Air Canada was not in contravention of the Regulations since there was evidence which established that the health of employees was not being endangered. The Regional Safety Officer further agreed with the use of the disposable masks because ethylene glycol was an irritant and the masks would further reduce exposure to that substance. The Regional Safety Officer RESCINDED the direction.