

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: R.J. Lajoie
Shift Supervisor, Dept'l Safety
Heavy Water Division
Ontario Hydro, Tiverton , Ont.

Mis en cause: R.D. Fortner, Safety Officer No. 2855
London District Office
Human Resources Development Canada

Before: Bertrand Southière
Regional Safety Officer
Human Resources Development Canada

A hearing was held on June 14, 1995, at Kincardine, Ont. In attendance were:

- George Evans, Operations manager, Heavy Water Division, Ontario Hydro;
- Jerry Orszynowicz, Power Workers Union, co-chair, Joint Safety and Health Committee;
- Steve Robinson, Ontario Hydro, co-chair, Joint Safety and Health Committee;
- R.J. Lajoie, Shift Supervisor, Departmental Safety, Heavy Water Division;
- R. Fortner, Safety Officer, London District Office, HRDC;
- Ted Tomayer, A/District manager, London District Office, HRDC.

Background

On January 26, 1995, R.D. Fortner, a safety officer of the London District Office of Human Resources Development Canada, conducted an inspection at the Bruce Heavy Water Plant also known as the Heavy Water Division, Bruce Nuclear Power Development, Ontario Hydro, at Tiverton, Ontario. As a follow-up to this inspection, he issued the following direction:

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

DIRECTION TO THE EMPLOYER UNDER SUBSECTION 145(1)

On January 26, 1995 the undersigned Safety Officer conducted an inspection in the work place operated by Ontario Hydro, Bruce Nuclear Power Development, being an employer subject to the Canada Labour Code, Part II, at Tiverton , Ontario, the said work place being known as the Heavy Water Division.

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

Subsection 125(j) of the Canada Labour Code, Part II, subsection 12.7(2) of the Canada Occupational Safety and Health Regulations (COSH), and subsection 6.1.4 of the CSA Standard Z94.4-M1982 - Selection , Care and Use of Respirators, dated may 1982, as amended to September 1984.

"Self contained breathing apparatus shall not be modified to accommodate a resuscitator nor should it be used as such."

Therefore you are HEREBY DIRECTED, pursuant to subsection 145(1) of the Canada Labour Code, Part II, to terminate the contravention forthwith.

Issued at London, Ontario, this 2nd day of February 1995.

*R.D. Fortner
Safety Officer
No. 2855*

Subsequently, on February 14, 1995, Ontario Hydro requested a review of this direction.

Heavy water ("deuterium oxide") is extracted from lake Huron's water by a multi-stage concentration process. The primary stages of this process use hydrogen sulphide (H₂S) under such pressures and temperatures that, at each stage, heavy water concentrations rise by a factor of about 4, from an initial concentration of about 150 ppm in the feedwater from the lake to a final concentration of 20%. This concentrate is then put through a final distillation to obtain high purity heavy water.

Hydrogen sulphide is a hazardous chemical and the American Conference of Governmental Industrial Hygienists (ACGIH) has established a TLV-TWA of 10 ppm and a TLV-STEL of 15 ppm for this compound. The hydrogen sulphide is continuously recirculated with minimal losses to the environment, however, there is on site some 980 tons of it. Leaks do occur in such places as valves, flanges and for this reason, employees working around the plant carry with them egress

packs: this is a respirator with a mouth piece, a noseclip and a small cylinder containing enough compressed air to last a person about 7 minutes, enough time to escape a contaminated area. The egress pack also contains goggles for eye protection.

In some sectors of the plant where leaks are more probable, special safety precautions are in force. In these areas, identified as "Buddy Areas", employees must work in groups of two or three. Also, there are "Packalarm" stations every 50 feet or so (about 150 in total): each of these stations contains a Scott Air-Pak Model IIa self-contained breathing apparatus (SCBA) to which is also attached a resuscitator head. The Packalarm stations are also connected to a central control room. If an employee, while working in a buddy area, loses consciousness due to hydrogen sulphide, his buddy must immediately don his escape pack, then go to the nearest Packalarm station. There he will sound the alarm, put on the Scott Air-Pak and return to his companion. Using the attached resuscitator, he will then attempt to resuscitate the victim while awaiting the rescue team. The rescue team will normally be on site within 4 minutes of the alarm being given.

The addition of a resuscitator head to the Scott Air-Pak Model IIa SCBA was done at the request of Ontario Hydro by Safety Supply Canada Ltd., the Canadian distributor for Scott equipment. This combined SCBA/resuscitator has been in use for 23 years at this plant and, I am told, was also in use at the Glace Bay and the Port Hawkesbury heavy water plants for 10 years and 15 years respectively. Over this 23 year period, 17 persons were overcome by hydrogen sulphide and successfully resuscitated, using this equipment, with no adverse effects.

Discussion

In his direction issued under subsection 145(1) of the Canada labour Code, Safety officer R.D. Fortner made reference to subsection 12.7(2) of the Canada Occupational Safety and Health Regulations and subsection 6.1.4 of CSA standard Z94.4-M1982, as amended to September 1984. These references read as follows:

-COSH Regulations,

12.7(2) A respiratory protective device referred to in subsection (1) shall be selected, fitted, cared for, used and maintained in accordance with the standards set out in CSA Standard Z94.4-M1982, *Selection, Care and Use of Respirators*, the English version of which is dated May, 1982, as amended to September, 1984 and the French version of which is dated March, 1983, as amended to September, 1984, excluding clauses 6.1.5, 10.3.3.1.2 and 10.3.3.4.2(c).

-CSA standard Z94.4-M1982

6.1.4 Self-contained breathing apparatus shall not be modified to accommodate a resuscitator nor should it be used as such.

The modified SCBA equipment used by Ontario Hydro does not meet the identified requirement of the CSA standard. In a letter dated February 27, 1992, addressed to Mr. Alfred Downie, co-chairman, joint safety and health committee, Ontario Hydro, Mr. W.P. Williams of Safety Supply Canada Ltd further says: "The attachment of the resuscitator head was at the request of Ontario Hydro. It was pointed out at that time that this would void the Bureau of Mines approval (NIOSH

and the CSA standard was not in existence at the time). However, the addition of a resuscitator to a self contained breathing apparatus would void NIOSH and is not recommended by the CSA standard Z94.4 M-1982".

Decision

The direction was issued under subsection 145(1) of the Code and the specific subsection of the regulations as well as the specific requirements of the referenced standard were properly identified. There is no disagreement from any party that the modified SCBA is in contravention of the CSA standard and, therefore, of the regulation that references it. As it is written, the regulation does not allow any leeway nor does it allow "grandfathering". Consequently, **I HEREBY CONFIRM** the direction issued on the second day of February, 1995, by safety officer R.D. Fortner to Ontario Hydro, Bruce Nuclear Power Development, Heavy Water Division.

Remarks

Self-contained Breathing Apparatus modified by the adjunction of a resuscitator has been in use at this particular plant for 23 years. It was also used previously at the Glace Bay Heavy Water plant for 10 years, and at the Port Hawkesbury Heavy Water plant for 15 years. Over the 23 years it has been in use at this particular plant, in the 17 cases where persons were overcome by hydrogen sulphide, they were resuscitated with no adverse effects.

Ontario Hydro has set up, maintained and improved over the years a training program for its employees such that rescue operations of persons overcome by hydrogen sulphide has been 100% successful. This training program features refresher training courses for the buddy system once a month. The employer is to be commended for its dedication to the safety of its employees.

At the hearing, presentations were also made by the Union representatives to the effect that they wanted to retain the present system. One of the alternatives to the modified SCBA is to use a regular SCBA and an independent resuscitator. This could mean increased bulk and weight which could be a handicap in certain situations.

The modified SCBA has been demonstrated at this site to be a satisfactory personal protection and rescue device. However, the wording of the regulation is very specific and leaves me no alternative.

Decision given on July 11, 1995

Bertrand Southière
Regional Safety Officer

SUMMARY OF REGIONAL SAFETY OFFICER DECISION

Applicant: R.J. Lajoie
Shift Supervisor, Dept'l Safety
Heavy Water Division
Ontario Hydro, Tiverton , Ont.

KEYWORDS

Hydrogen sulphide; heavy water; Ontario Hydro; self-contained breathing apparatus; resuscitator;

PROVISIONS

Code: 125(j)
Regulations: 12.7(2)

SUMMARY

Further to an inspection at the Heavy Water Division, Bruce Nuclear Power Development, Ontario Hydro, in Tiverton, Ontario, a Safety Officer issued a direction to the effect that a self-contained breathing apparatus (SCBA) with attached resuscitator head was not acceptable under the referenced provisions of the Code and the Canada Occupational Safety and Health Regulations. There are about 150 emergency rescue stations (Packalarm stations) distributed throughout the more hazardous sectors of the plant. Each of these stations features an alarm which is linked to a central control room and it also contains one of the afore-mentioned modified SCBA units. In these sectors of the plant, employees work in groups of two or three and each one of them carries an escape pack. If an employee is incapacitated by a leak of hydrogen sulphide, his buddy puts on his escape pack, goes to the Packalarm station, sounds the alarm, dons the SCBA, goes back to his buddy and attempts to resuscitate him with the attached respirator while awaiting the rescue team.

Ontario Hydro appealed the direction, saying the modified SCBA units had been in use for 23 years and had been used successfully 17 times during that period with no fatality or permanent disabilities. The regional safety officer dismissed the appeal and confirmed the direction because the regulations are very specific, allow no leeway and do not permit "grandfathering".