

Workplace Health and Safety Fatality Report



WORKER EXPOSURE TO CARBON MONOXIDE

Type of Incident: Fatality

Date of Incident: January 3, 2008

Government of Alberta ■
Employment and Immigration

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SECTION 1.0 DATE AND TIME OF INCIDENT

1.1 The incident occurred on January 3, 2008 at approximately 3:20 p.m.

SECTION 2.0 NAME AND ADDRESS OF PRINCIPAL PARTIES

2.1 Employer

2.1.1 White Ice (1995) Ltd.
4810 32 Street, S.E.
Calgary, AB
T2B 2S6

2.2 Workers

2.6.1 Name:
(Names and personal details were removed before distribution of this report)

2.6.2 Name:

SECTION 3.0 DESCRIPTION OF PRINCIPAL PARTIES

3.1 White Ice (1995) Ltd. is a company that distributes and supplies paint products, equipment and services to skating, hockey and curling rinks throughout Canada, United States and United Kingdom. The company employs approximately 4 workers.

3.2 The owner had been Vice President and Chief Executive Officer of White Ice (1995) Ltd. for approximately 13 years. He was responsible for the warehouse operations of the company. There was no record found to indicate that the owner had received formal training on the safe use of propane-powered forklifts.

3.3 The worker had worked for White Ice (1995) Ltd. since July, 2007. He worked full time as a summer student for July and August, 2007 and then on a casual, part-time basis throughout the fall and winter months. His duties included general labour in the warehouse. There was no record found to indicate that the worker had received formal training on the safe use of propane-powered forklifts.

SECTION 4.0 LOCATION OF INCIDENT

- 4.1 The incident occurred in the warehouse located at 4810 32 Street S.E., Calgary, Alberta (Refer to Attachment A – Map).

SECTION 5.0 EQUIPMENT, MATERIAL AND OBSERVATIONS

5.1 Equipment and Material

- 5.1.1 Three propane-powered forklifts, a Nissan, a Kamatsu and a Mitsubishi were involved in the incident. These forklifts were operated on an individual basis between January 2 and 3, 2008 (Refer to Attachment B – Photographs 1, 2, 3, 4 and 5).

Maintenance records indicated that the three propane-powered forklifts were not maintained in good operating condition and required tune-up. There were no manufacturer's specifications for the three propane-powered forklifts available at the worksite.

- 5.1.2 Industrial racking was used to store paint supplies and equipment on the north and south sides of the warehouse. The owner and the worker were in the process of adjusting the racking and rearranging the material and equipment at the time of the incident (Refer to Attachment B – Photograph 1).
- 5.1.3 There was no mechanical ventilation system in the warehouse and air was circulated using three ceiling fans. The bay door was kept in the closed position when the propane-powered forklifts were operated in the warehouse (Refer to Attachment B – Photograph 1).
- 5.1.4 After the incident, the City of Calgary, Fire Department measured the atmospheric concentration of carbon monoxide in the range of 116 to 570 parts per million parts of contaminated air (ppm) in the warehouse. The Alberta 8-hour occupational exposure limit for carbon monoxide is 25 ppm.
- 5.1.5 The Medical Examiner's Office reported that the concentration of carboxyhemoglobin in the blood of the deceased owner was 46 %. The Biological Exposure Index (BEI) recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) at the end of the shift is 3.5 % carboxyhemoglobin level in blood.

5.2 Observations

- 5.2.1 The temperature on January 3, 2008 averaged approximately -1.4 degrees Celsius.

SECTION 6.0 NARRATIVE DESCRIPTION OF THE INCIDENT

- 6.1 On January 2, 2008, the owner and the worker started to adjust racking and rearrange material and equipment in the warehouse using the Mitsubishi, Komatsu and Nissan forklifts. They continued the same work on January 3, 2008 at approximately 9:30 a.m.
- 6.2 At approximately 11:30 a.m., the worker indicated that he was experiencing a headache.
- 6.3 After lunch, the owner and the worker continued working in the warehouse rearranging the racking until approximately 3:00 p.m.
- 6.4 The worker was positioning a pallet on the south wall racking with the Nissan forklift. During the positioning, the worker repeatedly hit the wall behind the racking with the pallet.
- 6.5 The owner advised the worker to go outside for a short time to get some fresh air.
- 6.6 The worker went outside. When he came back, the owner asked the worker to take measurements of the racking height located on the south wall. The worker indicated that he was feeling disoriented and had difficulty taking measurements.
- 6.7 The owner asked the worker to come down and sit with him on the folding tables at the centre of the warehouse.
- 6.8 At approximately 3:20 p.m., while they were sitting on the folding tables, the owner collapsed.
- 6.9 The worker immediately called 911.
- 6.10 The City of Calgary, Fire Department, Emergency Medical Services (EMS) and Calgary Police Services arrived at the site.
- 6.11 The City of Calgary, Fire Department removed the owner from the warehouse. Both the owner and the worker were treated by EMS.
- 6.12 The owner was transported to Foothills Hospital where he was pronounced dead.
- 6.13 The worker was transported to Peter Lougheed Hospital where he was treated and released on the same day.

SECTION 7.0 ANALYSIS

7.1 Direct Cause

7.1.1 The owner died when he was exposed to high concentrations of carbon monoxide.

7.2 Contributing Factors

7.2.1 There was no mechanical ventilation in the warehouse. The bay door was kept closed due to cold weather conditions.

7.2.2 The Nissan, Mitsubishi and Komatsu forklifts were not maintained in good operating condition and required tune-up. After the incident, on the same day at approximately 3:40 p.m., the City of Calgary, Fire Department measured the atmospheric concentration of carbon monoxide in the range of 116 to 570 ppm in the warehouse.

7.2.3 The employer did not conduct a hazard assessment to identify the potential hazard of carbon monoxide build-up by operating propane-powered forklifts in the warehouse.

SECTION 8.0 FOLLOW-UP/ ACTION TAKEN

8.1 Employment and Immigration; Workplace Health and Safety Compliance

8.1.1 Workplace Health and Safety Compliance (WHSC) received an incident notification on January 3, 2008, responded to the site and commenced an incident investigation on the same day.

8.1.2 On January 3, 2008, WHSC issued the following orders to White Ice (1995) Ltd.:

- stop work order for indoor use of all propane-powered forklifts until causes of the incident were determined and control measures were implemented
- stop use order for the Nissan forklift until it was inspected and repaired in accordance with the manufacturer's specifications
- conduct an incident investigation and prepare a report

8.1.3 On January 4, 2008, WHSC issued stop use orders on the Mitsubishi and Komatsu forklifts.

8.1.4 On January 15, 2008, WHSC, Alberta Public Safety and the City of Calgary Building Regulations, Development & Building Approvals Division met with the employer and discussed the requirements for use of propane-powered forklifts in the warehouse.

- 8.1.5 On January 16, 2008, WHSC discussed with White Ice (1995) Ltd. the requirement for conducting a hazard assessment and training of workers.
- 8.1.6 On January 30, 2008, WHSC met with the employer to discuss the status of the Nissan, Mitsubishi and Komatsu forklifts. At this time, replacing the propane-powered forklifts with an electric forklift was discussed.
- 8.1.7 On February 11, 2008, WHSC reviewed and accepted the incident investigation report submitted by the employer.

8.2 Industry

- 8.2.1 Following the incident, White Ice (1995) Ltd. voluntarily stopped the use of all propane-powered forklifts in the warehouse.
- 8.2.2 On January 7, 2008, the employer removed the Mitsubishi and Komatsu forklifts from service.
- 8.2.3 On January 11, 2008, the employer had the Nissan forklift inspected and repaired in accordance with the manufacturer's specifications. This forklift was only operated outside in the yard.
- 8.2.4 On January 30, 2008, the employer started conducting hazard assessment for the worksite.
- 8.2.5 On February 11, 2008, the employer submitted their incident investigation report to WHSC for review.
- 8.2.6 On February 13, 2008, the employer bought an electric forklift and removed all three propane-powered forklifts from service.
- 8.2.7 The employer complied with all of the orders issued by WHSC.

8.3 Additional Measures

- 8.3.1 There were no additional measures.

SECTION 9.0 SIGNATURES

Original Report Signed
Lead Investigator

Date

Original Report Signed
Reviewer

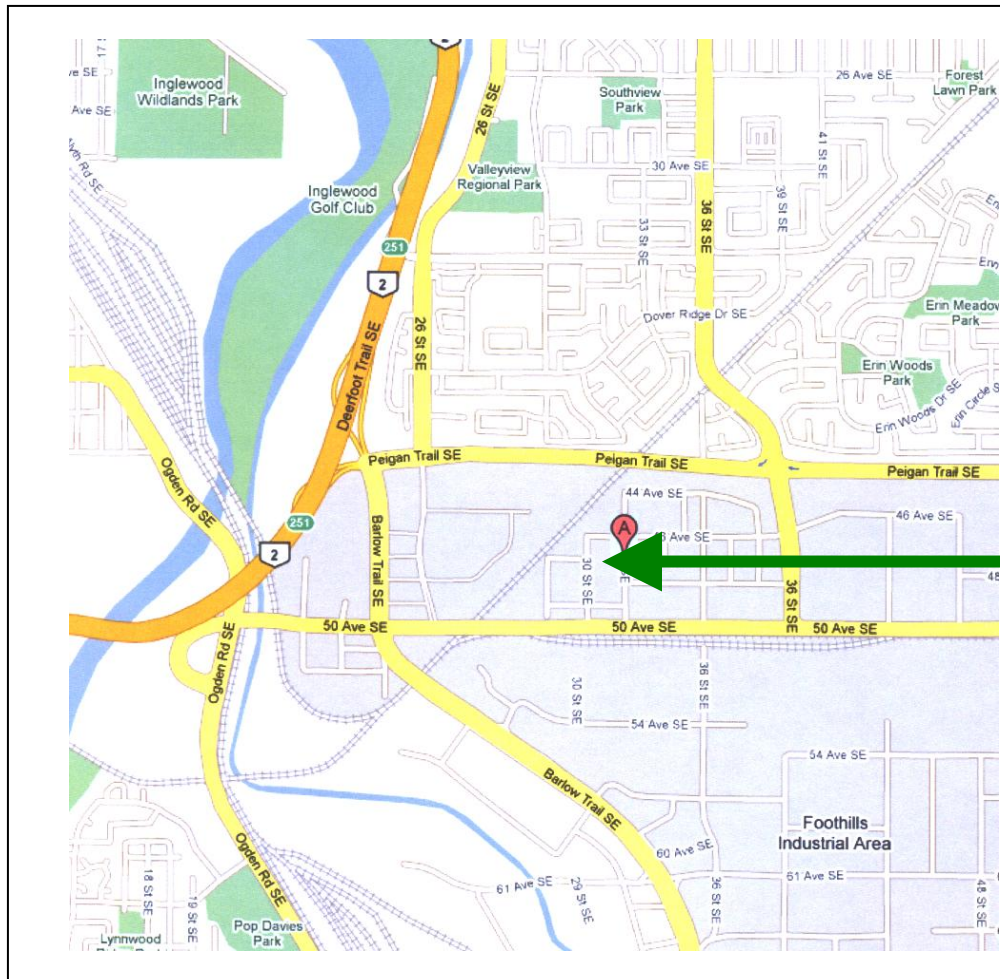
Date

Original Report Signed
Regional Senior Manager

Date

SECTION 10.0 ATTACHMENTS:

Attachment A Map
Attachment B Photographs



The arrow shows the location where the incident occurred at White Ice (1995) Ltd., 4810 32 Street, S.E., Calgary, Alberta.



Photograph 1: Shows the warehouse where the incident occurred

1. Komatsu forklift
2. Bay door
3. Nissan forklift
4. Mitsubishi forklift
5. Racking
6. Folded tables on which the owner collapsed



Photograph 2: Shows the Nissan forklift parked at the east side of the warehouse



Photograph 3: Shows the Mitsubishi forklift parked on the south side of the warehouse



Photograph 4: Shows the Komatsu forklift parked on the north side of the warehouse



Photograph 5: Shows the folded tables on which the owner collapsed