

MANUFACTURING DIVISION
KINGSTON WORKS

1983 March 15

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STUDY NO. 83-03

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ASBESTOS STRIP-OUT: FRONT OFFICE BASEMENT #C-6

On 1983 February 10, the Insulation Crew removed the sprayed-on asbestos from the ceiling in front office basement storage room #C-6. During this time the Environmental Affairs Group conducted fixed-location air monitoring for airborne asbestos, however, no personal monitoring was conducted.

Four area samples were collected inside the storage room during the strip-out, while one sample was collected outside the plastic barrier, adjacent to the word processor room.

Bulk Analysis of the ceiling material revealed that it contained 60-70% chrysotile asbestos, 20-30% mineral wool and 5-10% non-fibrous material; no amosite asbestos was detected.

Strip-out Control Measures

A plastic enclosure was erected, that sealed off the storage room and hall where the strip-out took place. Wetting agent Igepal CO-710 was applied to the ceiling to reduce dust levels during the strip-out. During this strip-out a new spray nozzle, that provided a wider spray, was used for applying the wetting agent.

All insulators wore half-mask cartridge respirators equipped with dust filters approved for asbestos. The minimum protection factor offered by these units has been rated at ten.

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DUP 0909171

DU 028992

Chrysotile Asbestos: Exposure Standards

The exposure limits for chrysotile asbestos as specified under the "Regulation Respecting Asbestos" under the Ontario Occupational Health and Safety Act are as follows:

1. 40 hour time-weighted average (TWA) exposure limit
= 1.0 fibres/cc
2. maximum allowable concentration not to be exceeded for any period of time
= 5.0 fibres/cc

Notes

1. The E.A.G. will continue to take the conservative approach and time-weight exposure levels over an 8 hour period. The 40 hour period, specified in the regulation, is not practical for field-related work.
2. "Fibre" means a fibre of asbestos that has a length greater than 5 micrometers and a length to width ratio not less than 3 to 1.

Sample Collection and Analytical Method

(See Appendix I)

Survey Results

The 8 hour TWA ambient level of airborne asbestos inside the storage room, as estimated by the *geometric mean of the four samples collected, was 2.3 fibres/cc. Individual sample results were as follows:

<u>Location</u>	<u>Asbestos Concentration (fibres/cc)</u>
inside storage room below A/C unit	2.1
inside storage room below A/C unit	2.4
north west corner of storage room below window	1.9
west end of storage room beside door	2.9

* short-term air sample results have been shown to follow a log-normal distribution which is characterized by the geometric mean (median) and geometric standard deviation.

Summary

1. (a) During the strip-out, the ambient level of asbestos inside the storage room exceeded the TWA limit of 1.0 fibres/cc. The ambient level, however, was not found to exceed the ceiling standard of 5.0 fibres/cc. DUF 0909172

Summary -(cont'd)

1. (b) The respirators worn by insulators during the strip-out provided sufficient protection for the levels of airborne asbestos encountered.

Comments

1. The new spray nozzle which was used for applying the wetting agent proved favourable as dust levels were kept at a minimum. Strip-outs of this type are generally a lot dustier than those involving preformed removable insulation.
2. The 0.3 fibres/cc asbestos concentration, detected outside the plastic enclosure is high enough to warrant attention. During previous strip-outs, all samples collected outside plastic enclosures have resulted in undetectable amounts of airborne asbestos (less than 0.1 fibres/cc).

This result implies that the plastic barrier may have become damaged during the strip-out. Condition of the barrier should be inspected prior to, and during each strip-out.

3. In the near future, the Insulation crew plan to remove the asbestos from the ceiling in storage room C-8, which is adjacent to storage room C-6.

The E.A.G. recommends that this programme be continued until all asbestos has been removed from the ceilings of all front office basement storage rooms and offices.

Priority should be given to storage room C-5 as it contains no false ceiling and the asbestos ceiling remains exposed.

J. D. McNeil

RNMcn/nr
Attach.

DUP 0909173

DU 028994

APPENDIX I

ASBESTOS IN AIR: OFFICE BASEMENT STORAGE ROOM: SAMPLE COLLECTION AND ANALYTICAL METHOD

Sample Collection

All samples were collected on mixed cellulose ester filters (0.8 micron pore size) held in 3 piece open-faced filter cassettes. Air flow for each sample was provided by battery-operated Du Pont sampling pumps calibrated at 2 liters/minute $\pm 5\%$. Pump calibration was conducted with a soap-film flow meter and electronic stop-watch.

All samples ranged from 3 to 4 hours in duration.

Analytical Method

All samples were sent to Ontario Research Foundation where analysis of asbestos fibres was conducted in accordance with NIOSH method no. P & CAM 239.

In this method, phase contrast microscopy was employed to determine the concentration of fibres present. No attempt was made to identify the fibres observed, hence all fibres counted were assumed to be chrysotile asbestos.

Only those fibres having a length greater than five micrometers and a length to width ratio of 3 to 1 or greater, were included in the count. The lower limit of detection was 0.1 fibres/cc.

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