

Indian and Northern Affairs Canada
Waste Management and Northern Contaminants Programs
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June 01, 2005

Parks Canada
Box 390
Dawson City, Yukon
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Attn: Mr. Irwin Gaw, General Works Manager

Re: Mercury Vapour Concentrations in Ambient Air at the Bear Creek Compound

Dear Mr. Gaw,

For your records, here is the report of results from our site visit from May 27, 2005. The purpose of the site visit was to check mercury vapour concentrations in ambient air in selected buildings at the compound since. The visit was arranged following a conversation earlier, where you expressed concerns regarding the health and safety of Parks Canada personnel at the site.

In attendance: Rob Watt, Superintendent - Parks Canada
Irwin Gaw, General Works Manager - Parks Canada
Paula Hassard, Curatorial / Collections Officer - Parks Canada
Werner Liebau, Environmental Officer - DIAND Yukon Region
Clayton Dyck, Technical Assistant - Northern Research Institute

Time of arrival was 10:00 AM and environmental conditions were: mostly cloudy, approximately 15 degrees C, wind S at 15 to 20 km/h.

The equipment used was a Mercury Analyzer RA-915+ (OhioLumex Co., Inc.) with a detection limit for mercury vapour concentration in air of 2 nanograms per cubic meter (ng/m³).¹

The upper detection limit for accurate readings in the setting we used on site (multi-path cell) is given by the manufacturer at 20,000 ng/m³. For higher concentrations (up to 200,000 ng/m³) a different setting (single-path cell) is recommended. Therefore, the two highest readings close to equipment in the gold room should be interpreted with some reservation.

¹The RA-915+ analyzer operation is based on differential Zeeman atomic absorption spectrometry using high frequency modulation of light polarization.

Otherwise, the analyzer was felt to be in good working condition, to the best of our knowledge and experience, and the range of mercury detection appropriate for the levels of mercury vapour found.

Mercury Vapour Concentrations in Ambient Air at the Bear Creek Compound

The mercury analyzer in "on stream" mode measures and displays concentrations of mercury at the current moment. A mean value for a frame time of 10 seconds, however, is also displayed. The values given below are mean values.

Background mercury sampling was done at the gate and co-incidentally up-wind of the site, found to be 1 ng/m³.

Gold Room

entrance	10,400 ng/m ³
office	11,890 ng/m ³
near amalgamation drum	34,160 ng/m ³
floor drain	20,270 ng/m ³
storage room	10,500 ng/m ³

behind building (downwind)	41 ng/m ³
pipe lay down area	170 ng/m ³

Residence

living room	68 ng/m ³
kitchen	49 ng/m ³
basement	24 ng/m ³

Cat Shop

main shop area	4 ng/m ³
back room	6 ng/m ³

Machine Shop

main shop areas	38 ng/m ³
back area	12 ng/m ³

Cold Storage	11 ng/m ³
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Island

background	9 ng/m ³
former gold room bldg.	
under porch	12 ng/m ³
front room	19 ng/m ³
kitchen	15 ng/m ³
basement	16 ng/m ³

Health and Safety Guidelines for elemental mercury exposure (US & Yukon)

25,000 ng/m³ American Conference of Governmental Industrial Hygienists (ACGIH) - 8 hrs.
time weighted average

50,000 ng/m³ Yukon Workers' Compensation Health and Safety Board - 8-hour limit

150,000 ng/m³ Yukon Workers' Compensation Health and Safety Board - 15 minute limit

The site visit on May 27, 2005 was a preliminary screening for mercury vapour concentrations only and cannot replace a thorough environmental assessment.

There is evidence that there is still elemental mercury in the Gold Room and a possibility of some soils being contaminated with mercury in the vicinity of that building. It would also be of interest to investigate how much mercury had been used over time and if mercury containers and residuals have been disposed of in the vicinity of the compound.

If you have any questions regarding this investigation or other mercury related queries, feel free to contact me.

Sincerely



Werner Liebau, Environmental Officer
Waste Management and Northern Contaminants Programs

CC: Brett Hartshorne, DIAND
Ray Breneman, Parks Canada