

**LEGISLATIVE ASSEMBLY OF THE  
NORTHWEST TERRITORIES  
7<sup>TH</sup> COUNCIL, 54<sup>TH</sup> SESSION**

**TABLED DOCUMENT NO. 12-54**

**TABLED ON JANUARY 17, 1975**

PRELIMINARY REPORT OF A SPECIAL COMMITTEE FORMED TO STUDY  
THE LEVELS OF ARSENIC IN THE WATERS OF YELLOWKNIFE

The Committee met for the first time on January 13th, 1975  
and thence twice each day until January 16th.

The composition of the committee was as follows:

Chairman Dan Billing - Chief Environmental Protection Officer -  
Government of the N.W.T.

Members C. A. Lewis - District Manager Environment Canada - YK  
Dr. R. Wallace - Senior Biologist Environment Canada -  
YK  
A. Redshaw - Controller, Water Management - DINA - YK  
J. McLaren - Water Quality Officer - DINA - YK  
Dr. A. O. Uygur - Zone Director Health & Welfare Canada  
YK  
E. Ristan - Environmental Health Officer - Health &  
Welfare Canada - YK  
Mayor R. Findlay - City of Yellowknife  
Ald. C. Wynne - Chairman Protection Committee - City  
of Yellowknife  
B. Olszowski - Sec. Manager - City of Yellowknife  
R. McDermit - Chief Health Care Plan - Government of  
the N.W.T.

Advisor J. Grainge - Environment Canada - Edmonton

The committee separated the study into three parts:

- 1) Tapwater - Yellowknife
- 2) Lake water adjacent to Latham and Joliffe Islands
- 3) General Recommendations.

1) Tapwater - Yellowknife

Following a spill of water from a tailings pond in the vicinity of Back Bay in March, 1974, the people of Yellowknife became concerned about the danger of arsenic pollution of the drinking water in the vicinity.

Representatives of the N.W.T. Government, City of Yellowknife, Health & Welfare Canada, Dept. of Indian Affairs and Northern Development and Environment Canada decided that there should be a sampling program to determine the current condition of water in the city supply. The Dept. of Environment accepted responsibility for the analyses.

Between 25 April and 30 September 1974, twenty-nine samples of raw water of the city supply were taken.

During this period, the arsenic level in 18 of the 29 samples taken was reported as less than 0.02 ppm, this being the detection limit of the sampling and analytical techniques used. On no occasion did the remaining 11 samples exceed the maximum permissible level of 0.05 ppm recommended in the Canadian Drinking Water Standards and Objectives issued by the Department of National Health & Welfare in 1968.

It is the opinion of Health & Welfare Canada that the content of arsenic found in the water during this sampling program was not a health hazard to those persons drinking this tapwater.

It is recommended that:

1. In future sampling and analysis techniques for arsenic determination be used which will be more sensitive and which will be able to detect arsenic levels of at least 0.01 ppm. The method should give results which can be compared to the historical data collected in the 1960's and early 1970's.
2. At least once monthly sampling of the city water supply for arsenic be initiated immediately. The sampling program should be intensified during the spring run off period.
3. Routine analysis of the city drinking water for parameters such as hardness and for other trace metals of medical significance such as copper, zinc and nickel, be carried out at least 4 times a year to monitor long term changes of the waters in the Yellowknife area.
4. The results of these analytical tests on the waters from the Yellowknife area be made available to City Council, the N.W.T. Government and the N.W.T. Water Board.

RESULTS OF ARSENIC ANALYSES ON THE RAW WATER SUPPLY FROM THE YELLOWKNIFE RIVER AT THE CITY OF YELLOWKNIFE WATER TREATMENT PLANT LOCATED IN SCHOOL DRAW

<u>DATE</u>		<u>ARSENIC IN PPM</u>	<u>DATE</u>		<u>ARSENIC IN PPM</u>
April 25/74	<	0.02	June 24/74	<	0.02
April 29/74	<	0.02	July 2/74		0.024
May 2/74	<	0.02	July 11/74	<	0.02
May 6/74	<	0.02	July 15/74	<	0.02
May 9/74	<	0.02	July 22/74		0.022

<u>DATE</u>	<u>ARSENIC IN PPM</u>	<u>DATE</u>	<u>ARSENIC IN PPM</u>
May 13/74	0.03	July 29/74	< 0.02
May 16/74	0.02	August 6/74	0.026
May 21/74 <	0.02	August 12/74	0.031
May 23/74 <	0.02	August 19/74	0.022
May 30/74	0.023	August 26/74	< 0.02
June 3/74 <	0.02	September 3/74	< 0.02
June 6/74 <	0.02	September 9/74	< 0.02
June 10/74 <	0.02	September 16/74	< 0.02
June 17/74	0.022	September 23/74	0.026
		September 30/74	0.034

NOTE: Analyses of tapwater made during the current week by the Committee were below .001. 0.01

NOTE:

- a) < indicates a level "less than". The sampling and analytical techniques used could not detect an arsenic content below this level.
- b) All analyses were performed by the Environment Canada E.P.S. laboratory in Edmonton using the silver diethyldithiocarbamate method 104A as described in the 13th edition of "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association.
- c) Samples were taken by the Environmental Protection Service, Environment Canada from April 25/74 to June 10/74 and by the Health & Welfare Canada from June 10/74 to September 30/74.

2. Lake Waters Adjacent to Latham and Joliffe Islands

No water, ice, or snow should be used for drinking purposes. Arrangements already exist to pay for water delivery to those people who require social assistance for this purpose.

By recent analysis it has been found that fish caught in Back Bay has an arsenic content well below permissible levels and is therefore safe for human consumption.

3. General Recommendations

1. That H.W.C.\* carry out a health examination of an appropriate cross-section of volunteer local residents and the conclusions made public. Particular reference should be made to (a) long time citizens, particularly those that are not using piped city water; (b) those individuals that were examined during previous studies; (c) mine and mill workers and (d) anyone who requests examination.
2. That, in collaboration with other government agencies, H.W.C. undertake and make public an in-depth historical review of all information from a public health point of view. The review should contain reference to other areas in Canada and elsewhere where mining operations exist with similar arsenical waste treatment problems.
3. That the results of a study, by Health and Welfare Canada and Environment Canada to examine the levels and public health consequences of arsenic and other heavy metals in the air, soil, vegetation and water in and around

Yellowknife, be made public when completed. Background "natural" levels of arsenic in the area should be determined, including levels currently existing in other lakes in the vicinity.

4. That the N.W.T. Water Board examine in detail the effectiveness of dyke stability and tailings containment, and any underground storage of arsenic at the mines in question to ensure that the best containment procedures available are employed. Further, that such additional studies and appropriate actions as are required are carried out.
5. That the N.W.T. Water Board take steps to recommend and have carried out such studies as are required to improve the technology of treatment of liquid wastes from local mines.
6. That Environment Canada examine and make public all facets of the levels and treatment of air emissions from the local mines and ensure that the best technology is being applied. As a result of the above examination, such studies as are required to improve existing technology to further reduce arsenic and other heavy metal emissions from the local mines be undertaken.
7. All data collected by government agencies be made available to the City, the N.W.T. Government and the N.W.T. Water Board. The final reports be made public.

8. That the duties and responsibilities of the Chief Medical Health Officer for the N.W.T. under the Public Health Ordinance be clearly defined.
9. That the Chief Medical Health Officer of the N.W.T. be required to report to the Commissioner in writing at least once a month.
10. That further study be undertaken to determine and define safe levels of arsenic content in drinking water and food.
11. The Commissioner should appoint an officer to co-ordinate the reception and distribution of research material and data.

January 16, 1975