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YELLOWKNIFE ARSENIC STUDY RESULTS PUBLISHED

The Honourable Marc Lalonde, Minister of National Health and Welfare today released the findings of the recent survey of arsenic levels in hair samples taken from residents of Yellowknife, N.W.T. The survey was conducted as a follow-up to a previous study on arsenic in the environment in Yellowknife. Arsenic levels in hair are not a measure of a degree of health risk since actual body levels may be substantially lower. They do however indicate the degree of exposure to arsenic and are therefore of value in determining whether individuals should be further examined for body levels.

Major findings of the survey are:

- individuals employed in specific mill occupations showed significantly higher levels than the population as a whole, and require further examination and investigation. Underground miners did not show significant levels.
- over 90% of the other Yellowknife residents tested had arsenic levels of less than 5 ppm in their hair
- there is no correlation between arsenic levels and drinking water sources in Yellowknife
- samples which were analysed for mercury contamination as well as arsenic all showed levels well within accepted norms.

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The survey program was carried out in February, and consisted of the taking of hair samples from a large number of Yellowknife residents for the purpose of analysis for arsenic content. Hair sampling is the most rapid method of initial screening for a large number of people and provides a measure of the degree of exposure to arsenic of those tested. Persons who have no significant levels of arsenic in their hair will not have significant levels in their bodies. On the other hand, arsenic in hair may result from ingestion of arsenic or may merely represent arsenic deposited on the surface of the hair from fallout in the air, and significant levels in hair have often been found associated with insignificant levels in the body. For this reason, it was announced at the time of the survey that those persons whose hair samples revealed a significant degree of exposure would be asked to have a further investigation to determine if any risk to their health exists.

In assessing the results of the survey, Medical Services Branch officials emphasized that there are differences of opinion among scientists as to what constitutes an elevated arsenic level in hair. Levels up to 10 ppm have been found in populations with no known exposure to arsenic and this level is considered to be acceptable by some authorities. Others regard 5 ppm as a level that can be accepted as occurring in non-exposed populations.

A total of 700 persons volunteered to be tested. The survey findings for arsenic are as follows:

	<u>Under 5 ppm</u>		<u>5-10 ppm</u>		<u>Over 10 ppm</u>		<u>TOTAL TESTED</u>
	<u>No. of persons</u>	<u>% of total</u>	<u>No. of persons</u>	<u>% of total</u>	<u>No. of persons</u>	<u>% of total</u>	
Mine & mill workers	<u>61</u>	45.2	<u>30</u>	22.2	<u>44</u>	32.6	<u>135</u>
Other residents	<u>516</u>	91.3	<u>30</u>	5.3	<u>19</u>	3.4	<u>565</u>
All persons tested	<u>577</u>	82.4	<u>60</u>	8.6	<u>63</u>	9	<u>700</u>

In addition to testing all hair samples for arsenic, 20% of the samples were also tested for mercury content, as an earlier study had indicated the possibility of mercury contamination also occurring as a result of the processing of gold ore in the mill. All samples tested for mercury had levels of less than 10 ppm with one exception which was 25 ppm. Since the presently accepted maximum safety level for mercury is 60 ppm it is not considered necessary to do any follow-up studies on the mercury levels at this time. Furthermore, mercury has not been used in the processing of gold ore in Yellowknife since September 1968.

Clearly, the mine and mill workers as a group have a higher level of arsenic in hair than would be expected in a non-exposed population and follow-up action in respect of this group is necessary.

Although levels of arsenic in the vast majority of other Yellowknife citizens are below 5 ppm, and are therefore similar to levels for a non-exposed population, the levels of certain individuals in this group indicate the need for further investigation.

There was no correlation found in the survey between arsenic levels and drinking water sources. Particularly close attention was paid to

any possible relationship between arsenic levels and drinking water sources in Yellowknife as a result of concerns which had been expressed in recent months. The study found no correlation between the two, and therefore corroborates the findings of the water testing program carried out earlier this year.

As a result of the survey, further work will be carried out as follows:

1. All persons found to have hair levels of arsenic greater than 10 ppm will be asked to undergo an investigation which will include a specially designed diagnostic questionnaire combined with a physical examination, including a 24-hour urine sample for arsenic levels.
2. Concurrent with the above, and in co-ordination with other agencies, the environment in the mine and mill will be examined to identify sources of arsenic pollution and to measure the concentration of arsenic to determine the extent of exposure and to recommend corrective measures if indicated.
3. If the results of the medical examinations of those people whose levels exceeded 10 ppm indicate the need, similar investigations of persons found to have arsenic levels in the hair of between 5 and 10 ppm will then be undertaken.

In summary, the results of the survey indicate:

- (a) a health hazard may exist for workers in specific jobs in the mill and mine.
- (b) it is not likely that arsenic poses a health hazard for residents other than mill or mine workers. A small number of individuals had levels of arsenic in hair higher than expected in a non-exposed population, and these persons need further examination.
- (c) there is no correlation between arsenic levels and the source of the water supply in Yellowknife.

Further work will be carried out to determine the risk to the health of individual persons and to assess whether the levels of exposure in the mill and mine need further control.

Letters have gone out to all persons who participated in the survey informing them of their individual results and advising them of the significance of those results and of the further planned investigation.