[The following background information was distributed by Health Canada at the Port Hope Municipal Council meeting on November 20, 2007.]

URANIUM IN THE URINE OF PORT HOPE RESIDENTS
FACT SHEET

ISSUE

Radioactivity in Port Hope residents.

KEY POINTS

Scientists at Health Canada have carefully reviewed the results of uranium testing in Port Hope.

The concentrations of uranium found in urine obtained from nine Port Hope residents fall within the normal range of typical naturally occurring levels from any Canadian community.

These uranium concentrations will not cause any adverse health effects.

Health and environmental studies carried out in Port Hope over the years do not show any health effects from past or present exposure to radiation.

Health Canada's findings are supported by many independent studies, including Queen's University, Senes Consultants, and the Federal Government's Low Level Radioactive Waste Management Office.

All of the uranium concentrations reported in this study fall below regulatory limits.

It is important to note that all living things have radioactivity (e.g. uranium) in their bodies. The radioactivity is present naturally in food we eat, water we drink and air we breathe.

SUPPLEMENTARY POINTS

The different types of uranium measured in two individuals are consistent with very small amounts of inhaled uranium from industrial sources, however the amounts are below regulatory limits, and lower than normal radiation exposure received by all Canadians.

We are always willing to look at new information with regard to the health and safety of Canadians and will continue to do so.

Despite having requested for over a week the "study" which purportedly shows Port Hope residents are being exposed to unhealthy levels of radiation, Health Canada scientists have been provided with no new information.

In the absence of new information, Health Canada will continue to rely upon the eight studies it has conducted in Port Hope over the past 20 years, as well as the regular monitoring and quarterly water testing it undertakes there. All of this monitoring consistently indicates Port Hope residents are not at risk.

QUESTIONS AND ANSWERS

Q. Why is this a health concern now?

The Port Hope Community Health Concerns Committee (PHCHCC) commissioned the testing of nine Port Hope residents. The PHCHCC's interpretation of the test results suggested that there may be a health concern.

However, the concentrations of uranium found in urine obtained from nine Port Hope residents fall within the normal range of typical naturally occurring levels from any Canadian community.

Q. Will the federal government be investigating this further?

Health Canada is always looking at new information with regard to the health and safety of Canadians and will continue to do so.

BACKGROUND

The PHCHCC commissioned the Uranium Medical Research Centre to test the urine samples of nine Port Hope residents for uranium.

On November 13, 2007, the PHCHCC issued a press release as well as the poster by Durakovic, Gerdes, and Zimmerman. The press release claimed that one adult subject had 8 times the uranium concentration of the control average, and that one child had 3 times the uranium concentration of the controls. It further claims that four of the subjects had traces of U-236, indicative of reprocessed reactor fuel, and that one of those subjects had a higher U-238/U-235 ratio, indicative of depleted uranium.

Health Canada's analysis, summarized in the points below, shows a number of serious methodological flaws, which compromises the validity of the claims:

- The most serious flaw in the PHCHCC report is the misinterpretation of its own results of uranium concentrations in urine. Such concentrations are highly variable from person to person, or even with the same person from one day to the next. The concentration depends on diet (all foods contain traces of uranium,

some more than others) and the amount of fluids consumed (which can dilute the uranium and change the concentration).

- Tests of numerous subjects in the Ottawa area have given concentrations in urine ranging all the way from 3 to 60 nanograms per litre (ng/L). (One nanogram is equal to one billionth of a gram) The US Centre for Disease Control gives a 95th percentile value of 53 ng/L for males and 35 ng/L for females. This means that 10 to 15% of measurements will exceed 24.8 ng/L by pure chance. Thus, in a sample of 9 people, it is not surprising to find at least one value of this magnitude.

- Caution must be exercised in the interpretation of isotope ratio measurements at these very low concentrations of uranium. (Note that the reported U-236 amounts are of the order of one thousandth of a trillionth of a gram.) A very small contribution from U-235 hydride can give a false peak at U-236. Furthermore, this hydride can reduce the apparent amount of U-235, thus giving a false indication of depleted uranium. Unless these results are confirmed by repeat measurements, preferably by a different laboratory, the reports of depleted or reactor uranium in the Port Hope specimens cannot be substantiated.

- All of the reported uranium levels are extremely low and are typical of the spread in normal background values in individuals not exposed to uranium in the workplace or the environment. The highest reported uranium value would deliver a radiation dose which is only a tiny fraction of the public dose limit. This is true regardless of whether all the uranium is natural or whether it contains traces of artificial material.

- A sample size of only 9 subjects is too small to draw any firm conclusions. Furthermore, these subjects were highly variable, with 4 nuclear energy workers and 5 members of the general community, one of which was a child. A number of subjects were identified as "retired workers" and presumably senior citizens.

- Two controls are insufficient to make any comparisons. The number of controls should at least equal the number of subjects and should be matched for age and sex. Statements such as "8 times control for one adult" or "3 times control for one child" are thus meaningless in this situation.

Previous exposure and health studies in Port Hope:

- A cancer incidence study, released in 2000, showed that cancer patterns in the Port Hope population were no different from similar communities in Ontario.

- An overall mortality study in 2002 again showed patterns for Port Hope that did not differ from other Ontario communities.

- A cohort study of 50 years of mortality and 30 years of cancer incidence follow-up of 3,000 Port Hope Eldorado workers since the 1930s to present day (now Cameco) showed that these workers were healthier than the general male population of Canada. There was no significant relationship between occupational exposure and cancer incidence, cancer mortality, or other causes of death.

- A Queen's University study on lung cancer in the community did not show any anomalies that could be associated with radiation exposure.

- A Health Canada study on produce grown in Port Hope gardens showed that the uptake of uranium from soil to vegetables was less than one part in 10,000.

- Two Health Canada studies showed that uranium concentrations in Port Hope air are far below levels of health concern and have been declining steadily during the past 25 years.

- A dose reconstruction study showed that doses to Port Hope residents from uranium exposure have not exceeded 0.02 mSv/year, which is about 1% of natural background radiation.

- Health Canada has been monitoring uranium levels in Port Hope drinking water since 1983. Concentrations have varied from 0.4 to 1 micrograms per litre, which is typical of other Canadian communities using surface drinking water supplies. Higher levels of naturally occurring uranium are frequently found in water from deep wells in many parts of Canada.

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FACT SHEET

Uranium Concentrations in Port Hope, Ontario

Uranium has been refined in Port Hope, Ontario, since the early 1930s. In 2007, the Port Hope Community Health Concerns Committee analyzed samples, taken from residents, to assess the radiation exposure of individuals living in the area.

The Port Hope Community Health Concerns Committee (PHCHCC) study shows that the uranium concentrations in the samples of Port Hope residents are within the range of natural levels. These levels pose no health hazard.

The results of the study are also consistent with those of Health Canada which continues to monitor uranium in the environment and in workers who are residents of the Port Hope area. In all of these measurements the concentrations fall within the natural range of values found in other communities in Canada.

The major health effect associated with uranium exposure is kidney damage. This effect only occurs at high concentrations, hundreds to thousands times greater than the low levels found to date in Port Hope.

In March of 200l, the Government of Canada began a 10-year, $260-million initiative to develop a long-term management solution for the situation in Port Hope. This initiative is being managed by the Low Level Radioactive Waste Management Office of Atomic Energy of Canada Limited (AECL).

Health Canada officials will assess the full report from the Committee when they receive it and will continue to work to protect the health and safety of Port Hope residents.