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Canadian Nurses for Health and the Environment
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The Release of Human Biomonitoring Data In the Canadian Health Measures Survey

August 16, 2010 – Statistics Canada, in partnership with Health Canada and the Public Health Agency of Canada has released the long awaited results of its human biomonitoring data collected as part of the first cycle of the *Canadian Health Measures Survey* (CHMS). The survey, conducted from 2007-2009, involved approximately 5600 Canadians between ages 6 to 79 years from 15 sites around the country. The biomonitoring component of the survey is the first of its kind in Canada.

Biomonitoring is the measurement of a chemical, or products a chemical makes when it breaks down, in the human body (Health Canada, 2010a). In this case, measurements were taken from blood and urine samples provided by survey participants (Health Canada, 2010a). The results of the survey will serve to inform and guide scientists, health professionals and policy analysts in their evaluation of chemical exposure and aid in the development of necessary policies to protect the health of Canadians (Health Canada, 2010a).

Ninety-one (91) chemicals were measured in the first cycle of the CHMS, based on one or more of the following considerations:

- Known or suspected health effects;
- The level of public concern;
- Evidence of exposure in the Canadian population;
- New or existing requirements for public health action;
- The ability to detect and measure the chemical or its breakdown products in humans;
- Similarity to chemicals monitored in other national and international programs to allow for meaningful comparisons;
- The cost of performing the analysis (Health Canada, 2010b).

The list includes the following classes of chemicals:

- ❖ Metals (13 substances including arsenic, cadmium, lead, mercury and uranium);
- ❖ Organochlorines (14 substances including chlordane, DDT, hexachlorobenzene);
- ❖ Polychlorinated Biphenyls (PCBs) (24 substances);
- ❖ Polybrominated Flame Retardants (PBDEs) (10 substances);
- ❖ Perfluorinated Compounds (PFCs) (PFOS, PFOA and PFHxS);

- ❖ Phthalates (11 metabolites)*;
- ❖ Environmental phenol (bisphenol A);
- ❖ Pesticides (6 organophosphate metabolites, 5 pyrethroid metabolites, 2,4-dichlorophenoxyacetic acid);
- ❖ Chlorophenols (2,4-dichlorophenol);
- ❖ Tobacco (cotinine) (Health Canada, 2010b).

**Note: Phthalate metabolites data will be presented at a later date.*

Findings

Lead – Over 99% of Canadians aged 6-79 years have measurable amounts of lead in their blood, though less than 1% of the population have concentrations above the current Health Canada guidance value of 10 mcg/dL (Statistics Canada, 2010c).

Total Mercury – 90% of Canadians aged 6-79 years have blood levels above the limit of detection of 0.10 mcg/L, though less than 1% of Canadians aged 20-79 have total mercury concentrations above the current Health Canada blood guidance values of 20 mcg/L established for the general population (Statistics Canada, 2010c).

Bisphenol A (BPA) – urinary concentrations of BPA of 1.16 mcg/L were found and is consistent with international studies, although teens aged 12 to 19 years had the highest concentrations (Statistics Canada, 2010a).

Interpretation

Biomonitoring provides an estimate of exposure to a chemical but its presence does not necessarily result in adverse health effects (Health Canada, 2010c). The risk a chemical may pose is determined by evaluating its toxicity and the levels to which people may be exposed (Health Canada, 2010c). In fact, Canadians' levels of lead and total mercury are similar to those of people in the United States and Germany (Statistics Canada, 2010c). The federal government has indicated that the data from the survey will be used to help identify chemicals for which further action should be taken and to assess the effectiveness of current regulatory and environmental risk management actions (Health Canada, 2010c). Current legislation governs chemical substances in food, water, drugs, pesticides and consumer products, but a comprehensive national biomonitoring program is seen as an essential component of a regulatory framework (Health Canada, 2010c).

References

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