Third Report on Exposure of Canadians to Environmental Chemicals Released

On July 15, 2015, Health Canada released its *Third Report on Human Biomonitoring of Environmental Chemicals in Canada*, which provides the results of the biomonitoring component of the Canadian Health Measures Survey (CHMS) and presents comprehensive data on the exposure of the Canadian population to environmental chemicals, such as mercury, and several volatile organic compounds (VOCs), including benzene.

The federal government uses such data to protect Canadians from exposure to chemicals through laws such as the *Canadian Environmental Protection Act, 1999*, the *Pest Control Products Act*, the *Food and Drugs Act*, and the *Canada Consumer Product Safety Act*. It's also used to guide the Chemicals Management Plan.

(Learn how you can reduce workers' exposure to hazardous chemicals by taking seven steps to switch to safer chemicals.)

The CHMS is an ongoing national survey that collects information relevant to the health of Canadians through home interviews and direct physical measurements. The biomonitoring component of the CHMS involves the collection and analysis of blood and urine samples to measure concentrations of certain environmental chemicals.

Biomonitoring provides an estimate of exposure to a chemical.

But a chemical's presence alone won't necessarily result in adverse health effects. The risk a chemical substance poses is determined by evaluating both its toxicity and the levels to which people may be exposed.

The data relied on in the Third Report was collected between Jan. 2012 and Dec. 2013 from approximately 5,800 Canadians aged 3 to 79 years at 16 sites across Canada.

The Third Report describes the survey methods used and includes the following information for each chemical or chemical group:

- A scientific description of the chemical
- Common uses of the chemical
- Potential sources of exposure
- Information about possible health effects
- Existing Canadian biomonitoring data
- Relevant acts and regulations.

This cycle included the measurement of 48 environmental chemicals, including 33 that have been measured in previous cycles. These chemicals were selected based on one or more of the following considerations:

- Known or suspected health effects
- 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
- Costs of performing the analysis.

Table 1: Chemicals measured in cycle 3 of the Canadian Health Measures Survey	
Chemical groups	**Chemicals measured**
Metals and trace elements	6 arsenic species, cadmium, fluoride, lead, 3 forms of mercury
Acrylamide	acrylamide, glycidamide
Environmental phenols	bisphenol A, triclosan
Polycyclic aromatic hydrocarbons	4 chrysene metabolites, 1 fluoranthene metabolite, 3 fluorene metabolites, 5 phenanthrene metabolites, 1 pyrene metabolite, 1 benzo[a]pyrene metabolite, 2 naphthalene metabolites
Nicotine metabolite	cotinine
Volatile organic compounds	benzene (and 2 benzene metabolites), ethylbenzene, styrene, tetrachloroethylene, toluene, trichloroethylene, xylenes, bromodichloromethane, dibromochloromethane, tribromomethane, trichloromethane