

Canadian Health Measures Survey: Arsenic and Paraben concentrations in Canadians, 2014 and 2015

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Inorganic arsenic is a natural element that occurs in the environment. It can enter the human body through contaminated food or drinking water, air or through the skin with direct contact with contaminated soil. Elevated levels of arsenic in the body have been associated with cancer, neurological problems, circulatory problems, respiratory problems, skin irritation or nausea and vomiting.

Parabens are a group of chemicals that are often used to prevent the growth of bacteria and mold in cosmetic products, pharmaceuticals, foods, and beverages. Parabens can enter the human body through the skin or when swallowed. At this time, no adverse health effects in humans have been causally linked to the use of parabens but exposure is monitored.

Detected arsenic or parabens in urine may indicate recent exposure. Following exposure, arsenic or parabens are absorbed, metabolized and then excreted in urine.

In 2014 and 2015, cycle 4 of the Canadian Health Measures Survey (CHMS) measured the concentrations of inorganic arsenic species and parabens in urine from approximately 2,500 Canadians aged 3 to 79. Measured inorganic arsenic species included: arsenate, arsenite, metabolites dimethylarsinic acid (DMA) and monomethylarsonic acid (MMA). Measured parabens included methyl paraben, ethyl paraben, propyl paraben, and butyl paraben. Please see the [Fourth Report on Human Biomonitoring of Environmental Chemicals in Canada](#) produced by Health Canada for further details. The following are some results from the [Arsenic](#) and [Parabens](#) Fact Sheets released today.

Majority of Canadians had low detectable levels of arsenic in their urine

The results from cycle 4 of the CHMS indicate that almost all Canadians had at least one of the four species of inorganic arsenic detected in their urine. DMA was detected in 96% of the Canadian population aged 3 to 79. However, levels of inorganic arsenic were low as a large proportion of respondents did not have adequate detectable levels of these analytes. No significant differences were found between males and females for any inorganic arsenic species.

Differences were found in detectable arsenite and MMA species by age group. Age groups 12 and older were significantly more likely to have detectable level of arsenite than children aged 3 to 5. Similarly, individuals aged 12 to 19 (37%) and 20 to 39 (38%) were more likely to have detectable MMA than 3 to 5 year olds (22%) and 60 to 79 year olds (22%).

Females have higher detectable levels of parabens in their urine

The results from cycle 4 of the CHMS also indicate that 93% of Canadians aged 3 to 79 had at least one paraben (methyl paraben, ethyl paraben, propyl paraben or butyl paraben) detected in their urine. However, paraben levels were low as a large proportion of respondents did not have adequate detectable levels of these analytes. Methyl paraben (90%) was the most commonly detected paraben among Canadians. Females (96%) had higher detectable levels of at least one of the four measured parabens compared with males (90%). The youngest age group (3-to-5 year olds) had the highest detectable levels of any of the four parabens at 96%, while the 40-to 59-year-old age group had the lowest at 91%.



Note to readers

The Canadian Health Measures Survey (CHMS) is a national two-step survey. The first step is a personal interview at the respondent's household. The second step is a visit to the CHMS mobile examination clinic where physical measurements and blood and urine samples are taken. Cycle 4 of the CHMS was conducted from January 2014 to December 2015.

Detectable was defined as the respondent having a level of an arsenic and paraben analyte in their urine equal to or greater than the limit of detection (LOD). The LOD is the lowest concentration of an analyte that the machine used for the measurement is able to accurately detect.

More than 40% of the respondents had urine concentrations less than the LOD for arsenate, arsenite, MMA and parabens which meant respondents did not have detectable levels for these analytes to calculate an average concentration. Average values are not calculated for the analyte unless there is more than 60% of the population with urine concentrations greater than the LOD.

Any data presented as significant or as significantly different refers to data that have been tested via significance testing such as a t-test and have a p-value of less than 0.05.

Definitions, data sources and methods: survey number [5071](#).

Available in CANSIM: table [117-0024](#).

Data on concentrations of selected environmental chemicals adjusted for creatinine measured in the Canadian Health Measures Survey are available in the new publication *Concentrations of selected environmental chemicals in the Canadian population* ([82-627-X](#)).

Additional products featuring the most recent results from the 2014 and 2015 Canadian Health Measures Survey are now available from our website. This includes the *Health Fact Sheets* ([82-625-X](#)) "Inorganic-related arsenic concentrations in Canadians, 2014 and 2015" and "Paraben concentrations in Canadians, 2014 and 2015".

New data are available in the CANSIM table [117-0024](#) for male and female 12 to 19 year olds.

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca) or Media Relations (613-951-4636; STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca).