

Listen to the Science on Chemical Exposures with Health Canada



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Numerous scientific studies and media stories report that we are exposed to chemicals in our daily lives. While these reports may be true, are they important for our health? And how do we know?

Many chemicals are naturally present in our diets and serve a beneficial purpose. For example, vitamins and essential elements are necessary for our health, and many chemicals account for the appealing tastes and aromas of everything we eat and drink. Other chemicals, for example trace levels of metals and synthetic chemicals, are contaminants that are not naturally present.

A common thread that connects all of the chemicals to which we are exposed is that all are potentially harmful if exposure levels exceed safe exposure thresholds. This is true regardless of whether a chemical is naturally present or a contaminant.

A scientific challenge for any chemical, simply put, is to know how much we are exposed to and how that level compares to a safe threshold. In a [recent scientific study](#), a team of Health Canada researchers describe how exposures to a variety of chemicals, both naturally present and contaminants, can be measured and evaluated in a health context using the best available scientific tools.

The first part of that challenge relies on a scientific tool known as biomonitoring, in which biological fluids (e.g., urine) are analyzed for a chemical of interest. Since 2007, the Canadian government has conducted a nationally representative survey ([CHMS](#), Canadian Health Measures Survey) that includes biomonitoring for over 250 chemicals in Canadians

aged 3-79 years. Biomonitoring data provides evidence of exposure, but by itself does not indicate whether exposure levels are above or below safe thresholds.

In the recent study, the latest CHMS biomonitoring data were analyzed by comparison with available health-based screening values. For example, the BPA biomonitoring data were compared with a [biomonitoring equivalent](#) (BE) for BPA that had previously been derived by Health Canada researchers.

The BE value is the level of BPA that would be expected in urine if exposure occurred at the safe exposure threshold for BPA. The reason for analysis of urine is that BPA is rapidly eliminated from the body in urine after exposure. The safe threshold for BPA had also previously been established by Health Canada researchers.

As reported in the new study, the typical level of BPA in urine of Canadians was more than 1000 times below the BE for BPA, indicating a large margin of safety between actual exposure levels and the safe exposure threshold. This reassuring outcome suggests there are no health concerns for BPA at current exposure levels.

Even more reassuring is that these new results are similar to the results of a [previous analysis](#) of BPA biomonitoring data from an earlier CHMS cycle. The results are also consistent with an [analysis](#) of BPA biomonitoring data generated as part of a similar U.S. program known as the National Health and Nutrition Examination Survey (NHANES).

These analyses strongly support the views of Health Canada and the U.S. Food and Drug Administration on the safety of BPA. For example, the Canadian government reports on its [website](#) that “*The current research tells us the general public need not be concerned. In general, most Canadians are exposed to very low levels of bisphenol A, therefore, it does not pose a health risk.*”

A benefit of the analysis reported in the new study is that we can prioritize our health concerns about chemical exposures based on actual data. Although the study reported that exposures to most of the chemicals analyzed, like BPA, were below safe thresholds, that outcome was not the case for all chemicals. Actions to reduce chemical exposures and potentially improve health outcomes might be most effective if focused on chemicals with exposures above safe thresholds.