

Parabens in Canadians

December 2021



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BACKGROUND



What are parabens?

Parabens are a group of *para*-hydroxybenzoic acid esters. They are widely used as preservatives because of their antibacterial and antifungal properties. Common parabens detected in the Canadian population include methylparaben (CASRN 99-76-3) and propylparaben (CASRN 94-13-3).



Where are parabens found?

Parabens are used in personal care products, including makeup, moisturizers, sunscreens, hair-care products, skin cleansers, shaving products and toothpastes. They are also used in food packaging, prescription and non-prescription drugs, and pest control products.



How are people exposed to parabens?

People can be exposed to parabens through skin contact with personal care products, such as moisturizers and cosmetics. Oral exposure can also occur by eating foods or taking drugs containing parabens.



How are parabens measured in people?

Parabens are absorbed through the skin or gastrointestinal tract and metabolized. Parabens and their metabolites can be measured in urine and used as biomarkers of recent exposure.



What are the potential health impacts of parabens?

Health effects have not been observed as a result of exposures to parabens at concentrations found in cosmetics. The International Agency for Research on Cancer has not evaluated parabens with respect to human carcinogenicity.



What is the Government of Canada doing to lower human exposures to parabens?

In 2020, the Government of Canada completed a draft screening assessment of parabens under the *Canadian Environmental Protection Act, 1999*. The assessment proposed that methylparaben, propylparaben and butylparaben be identified as toxic. It also proposed that ethylparaben not be identified as toxic. The Government of Canada continues to monitor and assess parabens.

DATA SOURCES

Table 1. Biomonitoring initiatives and their target populations

Initiative	Target population
Canadian Health Measures Survey (CHMS)	General Canadian population living in the 10 provinces
U.S. National Health and Nutrition Examination Survey (NHANES)	General U.S. population

This fact sheet presents nationally representative data from the CHMS. These data are compared with data from the U.S. NHANES.

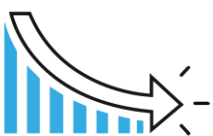
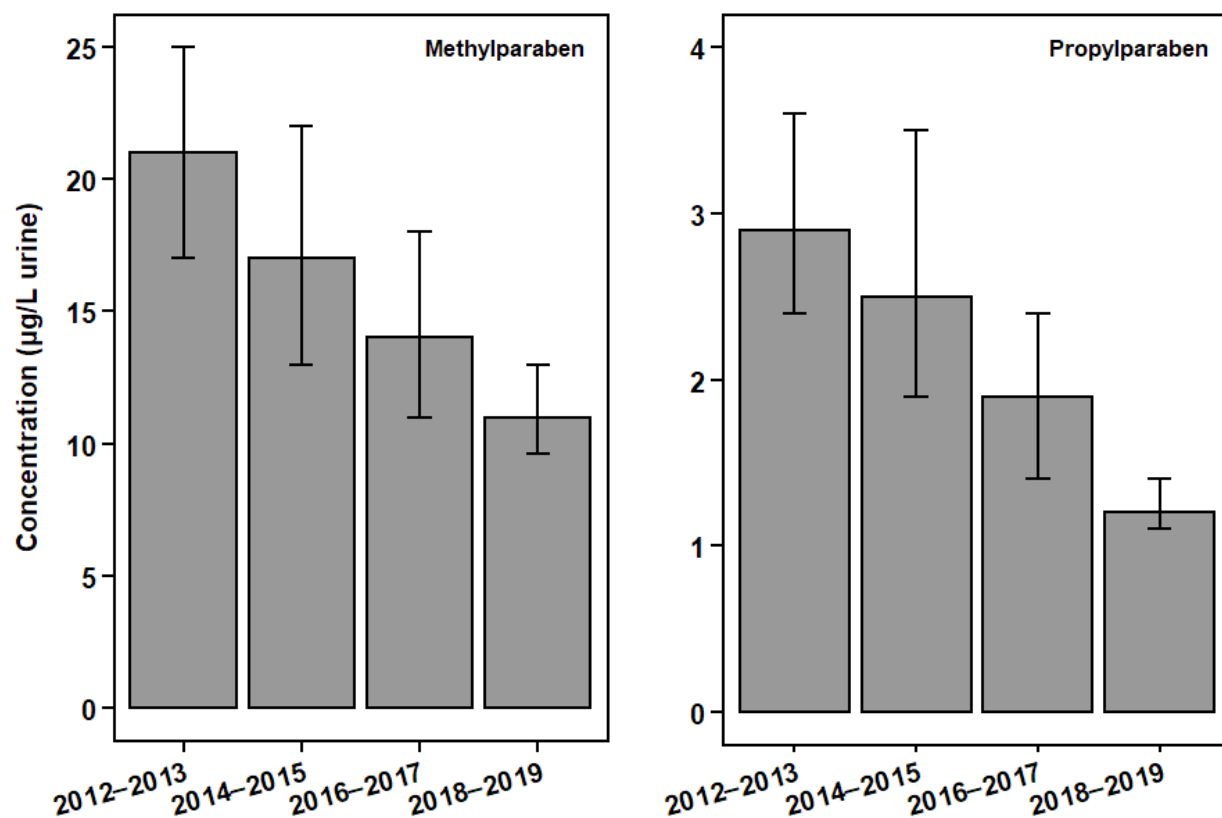
Table 2. Biomonitoring initiatives and their collection periods, participant age ranges, matrices sampled and biomarkers measured

Collection period	Age range (years)	Matrix	Biomarkers
CHMS			
2012–2013	3 to 79	Urine	Methylparaben, propylparaben
2014–2015	3 to 79	Urine	Methylparaben, propylparaben
2016–2017	3 to 79	Urine	Methylparaben, propylparaben
2018–2019	3 to 79	Urine	Methylparaben, propylparaben
U.S. NHANES			
2011–2012	6+	Urine	Methylparaben, propylparaben
2013–2014	6+	Urine	Methylparaben, propylparaben
2015–2016	3+	Urine	Methylparaben, propylparaben

RESULTS

Canadian population

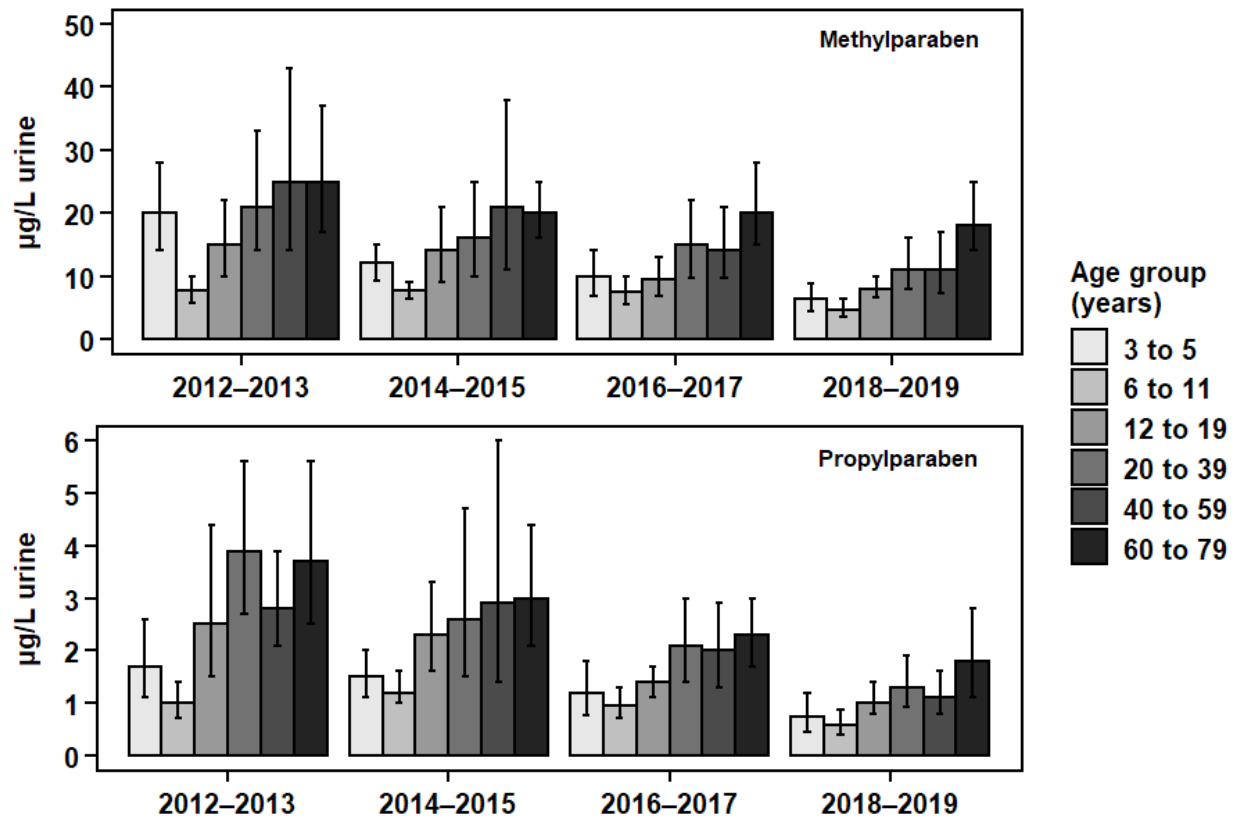
Figure 1. Paraben concentrations in the Canadian population aged 3 to 79. This figure shows the geometric mean concentrations of methylparaben and propylparaben in urine ($\mu\text{g/L}$) in the Canadian population from the CHMS (2012–2019).



There was a statistically significant decreasing trend ($P < 0.001$) in methylparaben and propylparaben concentrations in the Canadian population aged 3 to 79. Between 2012–2013 and 2018–2019, methylparaben concentrations declined by 46% and propylparaben concentrations declined by 58%.

Canadian population, by age group

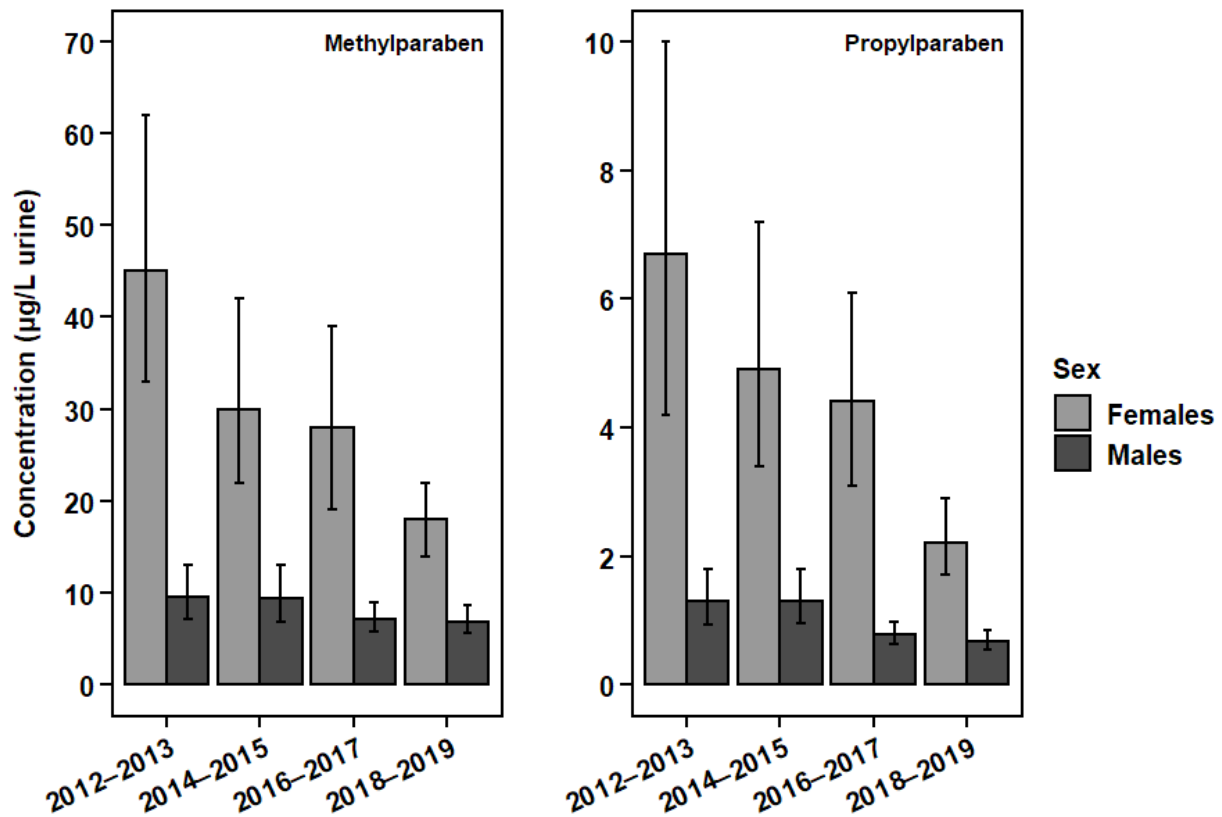
Figure 2. Paraben concentrations in the Canadian population, by age group. This figure shows the geometric mean concentrations of methylparaben and propylparaben in urine ($\mu\text{g/L}$) in the Canadian population by age group from the CHMS (2012–2019).



Concentrations of methylparaben and propylparaben were generally higher in adults than in children in the Canadian population.

Canadian population, by sex

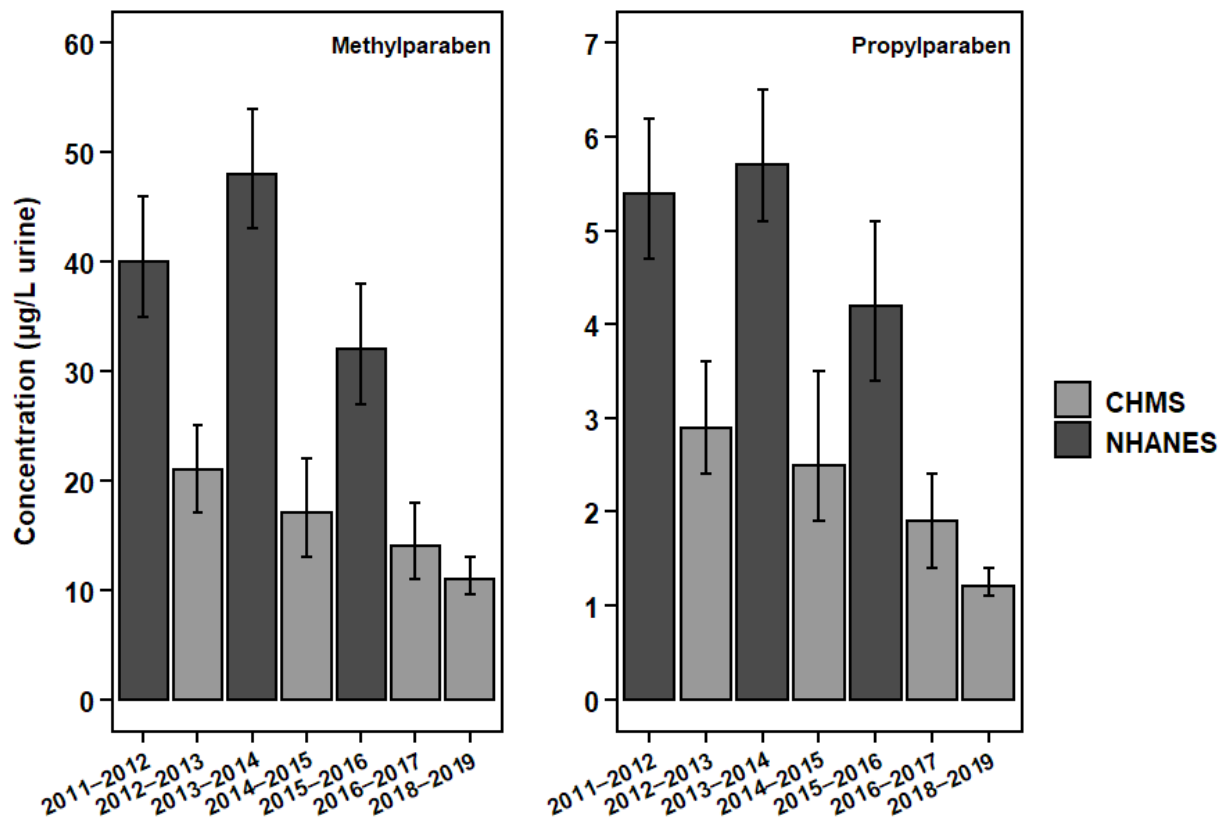
Figure 3. Paraben concentrations in the Canadian population aged 3 to 79, by sex. This figure shows the geometric mean concentrations of methylparaben and propylparaben in urine ($\mu\text{g/L}$) in the Canadian population by sex from the CHMS (2012–2019).



Concentrations of methylparaben and propylparaben were higher in females than in males in the Canadian population.

Comparison of the Canadian and U.S. populations

Figure 4. Paraben concentrations in the Canadian and U.S. populations. This figure shows the geometric mean concentrations of methylparaben and propylparaben in urine ($\mu\text{g/L}$) in the Canadian population from the CHMS (2012–2019) and in the U.S. population from the NHANES (2011–2016). Note that there are slight differences between the surveys in sampling (such as the age ranges of participants) and analysis (such as the limits of detection).



Concentrations of methylparaben and propylparaben were higher in the U.S. population than in the Canadian population.

ADDITIONAL INFORMATION

Centers for Disease Control and Prevention. 2021. National Report on Human Exposure to Environmental Chemicals. Atlanta, GA, USA.

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