

Overview of York University Fluoride Study

Prepared by the Water and Air Quality Bureau, Health Canada

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Health Canada's *Guidelines for Drinking Water Quality in Canada* provides parameters to provinces, territories and federal Government Departments for water systems across the country. The Drinking Water Guideline for fluoride establishes a maximum acceptable concentration (MAC) for fluoride at 1.5 mg/L that factors in all sources of exposure to fluoride. The Guideline, published in 2010, was informed by published peer reviewed studies and the recommendations of an expert panel that included the Chief Dental Officer. The expert panel examined both potential adverse health effects of fluoride and the public health benefits of adding fluoride to drinking water through community water fluoridation to prevent dental caries. Since the Drinking Water Guideline for fluoride was established in 2010, Health Canada has regularly reviewed the state of the science on the health effects of fluoride and has concluded the current available science indicates that fluoride at levels below this guideline does not pose a health concern.

A York University study, "Association Between Maternal Fluoride Exposure During Pregnancy and IQ Scores in Offspring in Canada", linking maternal fluoridation exposure during pregnancy to lower IQ scores in children aged 3 to 4 was published in JAMA Pediatrics on August 19, 2019. As is the case with all new science, Health Canada has reviewed this study and has considered it in weight of evidence-based decision-making to protect the health and safety of Canadians. It is important to note that when assessing the health risk, Health Canada looks at the available body of science –not one single study— in order to determine whether there is enough evidence to warrant a change in position.

In reviewing this study, Health Canada notes that from analysis of data and banked maternal urine (for fluoride) from the Maternal-Infant Research on Environmental Chemicals (MIREC) Study, the authors conclude that "... maternal exposure to higher levels of fluoride during pregnancy was associated with lower IQ scores in children aged 3 to 4 years." The key element of this study is that it is an observational study, which found an association between higher levels of two different measures of fluoride exposure during pregnancy and small decreases in child IQ at 3-4 years of age. This one study is not able to prove that prenatal fluoride exposure causes deficits in child IQ, only that there was an observation of such an association. The study was well designed and analysed. The authors identified limitations in the study and where possible implemented measures to reduce their impact. However, a number of uncertainties remain (e.g., estimation of prenatal fluoride exposure, other unmeasured factors affecting child IQ) which limit this study's ability to confirm a causal relationship between prenatal fluoride and deficits in child IQ.

This study is one of the first linking fluoride and neurological effects, and Health Canada will continue to monitor and evaluate studies as they are published. Based on the current weight of evidence, Health Canada continues to support the existing Drinking Water Guideline for fluoride. As Health Canada continues to keep abreast of scientific developments, the Department will collaborate with the Office of the Chief Dental Officer, provinces and territories and other interested stakeholders.