



Common Misconceptions about Fluoridation

This document is designed to dive deeply into a few studies that are often quoted by opponents with the result of misinforming the public about fluoride in water. Claims against water fluoridation often either misrepresent or misunderstand the research. Many claims made by opponents have been disproved.

Included here are a few specific studies that are often cited by opponents to fluoridation and the research and logic that refutes their claims. These individual study examples are provided to illustrate how easily fear and doubt may be built despite notable scientific consensus in support of fluoridation.

Myth #1: Fluoridation impacts children's neurodevelopment.

Source:

- Environmental Health Perspectives Study, "Developmental Fluoride Neurotoxicity: A Systemic Review and Meta-Analysis"
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3491930/>

The misconception:

Developmental neurotoxicity is a serious risk associated with elevated fluoride exposure, adversely affecting children's neurodevelopment.

The research:

- The authors of this paper [reviewed 27 studies](#), most of which were done in China.
- The authors themselves wrote that "each of the [studies] reviewed had deficiencies, in some cases rather serious ones, that limit the conclusions that can be drawn."
- These studies did not provide any data on concentrations of lead and arsenic in the water sources. This raises the concern that these compounds could have skewed the findings. This is not a minor concern, as [many areas of China](#) are known to have high levels of [lead](#) and [arsenic](#), both of which can have neurotoxic effects.
- Leading public health, medical and dental organizations have reviewed studies related to IQ and neurodevelopment often cited by opponents of fluoridation. Yet these organizations remain supporters of community water fluoridation. It stands to reason that these health and medical leaders don't view the studies as making a strong case for why they should rethink their position. These organizations include:
 - Centers for Disease Control and Prevention
 - American Academy of Pediatrics
 - American Dental Association
 - American Academy of Family Physicians
 - American Public Health Association
 - U.S. Community Preventive Services Task Force



Myth #2: Fluoridation affects children's IQ.

Source:

- Journal of the American Medicine Association Investigation: "Association between maternal fluoride exposure during pregnancy and IQ scores among offspring in Canada."
<https://jamanetwork.com/journals/jamapediatrics/fullarticle/2748634>

The misconception:

Higher levels of fluoride exposure during pregnancy were associated with lower IQ scores in children measured at age 3 to 4 years.

The research:

- The [Canadian Agency for Drugs and Technologies in Medicine](#) (CADTH) conducted an evaluation of the JAMA study and found that the study is based on "weak" evidence due to "potential errors and biases" and/or the failure to account for other factors that could have affected the study results. CADTH also reported that the study's conclusion "was not supported by the data."
- [This study](#) has many critical gaps. One gap is that we have no idea what the IQ scores of the mothers were. This is important because we know maternal IQs influence children's IQs. Another gap is that the study lacked any data on the children's lead exposures during the roughly 3 years between their births and when their IQs were tested. These and other gaps represent a lot of missing pieces.
- This study shows *virtually no difference* between the composite IQ scores in fluoridated and non-fluoridated communities. [See the Full-Scale IQ \(FSIQ\) scores in Table 1](#). It shows that the average IQ score among children in fluoridated communities (108.21) was almost the same as the IQs in non-fluoridated communities (108.07).
- More than 30 international researchers and public health experts [wrote a letter citing 10 significant concerns](#) about the methods and analysis used for this study.
- At least two of the authors of this study have stated they do *not* see it as something that should influence a community's decision about water fluoridation. In fact, one of them [told a BuzzFeed News reporter](#): "I think this message could be easily misconstrued as us saying don't drink fluoridated water — we're not saying that."

Further reading on Fluoridation and IQ

Several studies, reports and research reviews *strongly counter* the above claims. Consider the following:

- [The American Journal of Public Health](#) has published the only study (2015) that examined fluoride and IQs by: a) conducting the study in a country where water fluoridation is common; and b) testing IQs multiple times over a 30-year period of time. This study was conducted in New Zealand, where fluoridation occurs in many communities. Multiple IQ tests strengthens the reliability of the scores. The study showed no link between IQ scores and growing up in a fluoridated community. In fact, IQ scores were *slightly higher* in fluoridated areas.
- [The Archives of Toxicology](#) published a scientific review (2020) that was written by 30+ European experts in toxicology, neurology and food safety. They reviewed dozens of studies — in other words, this was "a study of studies." The experts wrote that the evidence "does not



support the presumption that fluoride should be considered as a human developmental neurotoxicant at current exposure levels in European countries.” The fluoride levels in Europe are very similar to the levels seen in the United States.

- The [National Academies of Science, Engineering and Medicine](#) (NASEM) was asked last year to evaluate a research document that had called fluoride a neurotoxin. After evaluating the document, NASEM issued a March 2020 report explaining that the evidence submitted did *not* provide adequate support for this conclusion about fluoride.
- [A study from Sweden](#) (2017) investigated the relationship between fluoride and cognitive ability, using labor market outcomes (i.e., employment) as a proxy for outcomes. These health economists found that fluoride concentrations below 1.5 mg/L had “zero effects on cognitive ability, non-cognitive ability and education.”
- [A study from Spain](#) (2019) was presented at a European conference, showing that prenatal exposure “at the levels found in fluorinated drinking water may exert a *beneficial effect* on the development at 4 years of age.” (Italics added for emphasis.) Several urban water systems in Spain are fluoridated. The authors are in the process of publishing a more detailed narrative of their research.