Fluoride & IQ Scores: What the Research Shows

(June 2014)
In 2012, anti-fluoride activists began posting articles online linking fluoridation to lower IQ scores.

But do these scary headlines distort the facts?

A journalist for the prestigious Knight-MIT science program examined these claims and wrote:

“... the studies did not reveal, let alone ‘confirm’, that the amount of fluoride in U.S. tap water has any influence on IQ.”

(Source: Faye Flam, “Huffington Post ‘Story’ says Fluoride Lowers IQ (and gives you cancer),” Knight Science Journalism at MIT, posted on May 22, 2013)
1. How Anti-Fluoride Activists Misrepresent Data and Science to Make Their IQ Argument
The Lancet article (March 2014):

- Anti-fluoride activists cite an article from this journal and distort its conclusions.
- Let’s take a closer look at the article — what it said and what it didn’t say.

The Lancet article (March 2014):

• The co-authors voiced concern about a “pandemic of developmental neurotoxicity” that is harming children’s cognitive development.

• They presented a list of 11 neurotoxicants that included fluoride.

• Although the article never refers to the concentration of fluoride used for fluoridation in the U.S., anti-fluoride activists are citing the article to raise fear.

The Lancet article (March 2014):

- It offers no new scientific evidence about fluoride

- Its only citation for fluoride is to a 2012 research review of studies that were conducted mostly in China. **Most of these studies are at least 10 years old.**

- These mostly Chinese studies are flawed because they did not adequately rule out arsenic, lead and other factors that could have distorted the IQ results.

How “other factors” may have distorted the results:

**Report:** Arsenic contamination in water might affect nearly 20 million Chinese.

Philip Grandjean was a co-author of both *The Lancet* article and the 2012 research review.

The 2012 article stated that “each of the [IQ studies] reviewed had deficiencies, in some cases rather serious ones, that limit the conclusions that can be drawn.”

(Source: Choi et al., “Developmental Fluoride Neurotoxicity: A Systematic Review and Meta-Analysis,” Environmental Health Perspectives, Vol. 120, No. 10, October 2012)
Grandjean was interviewed by a newspaper soon after he co-authored the 2012 review of the IQ studies.

**The newspaper:** Grandjean and a co-author “noted that the fluoride levels they studied were much higher than what is found in fluoridated water in the United States” and they recommended more research.

(Source: Dion Lefler, The Wichita Eagle, Sept. 11, 2012)
Dr. Philip Landrigan was a co-author of The Lancet article.

“There’s no question that, at low doses, it’s beneficial.”

In this magazine interview, he recognized fluoride’s value in preventing tooth decay.

(Source: Excerpts from J. Hamblin, “The Toxins That Threaten Our Brains,” The Atlantic, March 18, 2014)
He distinguished between the exposure levels in the U.S. and the high natural levels that are common in many areas of China.

“Fluoride is very much a two-edged sword,” Landrigan said. “There’s no question that, at low doses, it’s beneficial.” Fluoride has been shown to prevent dental cavities and aid skeletal growth. At higher levels, though, it causes tooth and bone lesions. The epidemiologic studies cited by Grandjean and Landrigan, which came from China, imply that high fluoride exposure has negative effects on brain growth.

“Are the exposure levels in China comparable to what we have in our drinking water and toothpaste?” I asked.

“No, they’re probably higher,” Landrigan said. “In some places in China, there are naturally high levels of fluoride in the groundwater, which picks it up because it’s water-soluble.”

“So your advice isn’t to take it out of our toothpaste?”

“Not at all,” Landrigan said. “I think it’s very good to have in toothpaste.”

(Source: Excerpts from J. Hamblin, “The Toxins That Threaten Our Brains,” The Atlantic, March 18, 2014)
Assessing the Chinese IQ studies:

Dr. Steven Novella, assistant professor of neurology at the Yale School of Medicine

“There are many rural areas of China that have naturally high levels of fluoride in the well water. The studies were largely looking at this exposure.”

(Source: S. Novella, “Anti-Fluoride Propaganda as News,” NeuroLogica, July 27, 2012; one typographical error was corrected in Novella’s original blog post.)
Assessing the Chinese IQ studies:

“There are many rural areas of China that have naturally high levels of fluoride in the well water. The studies were largely looking at this exposure.”

“But even taken at face value [these studies] do not indicate any association between lower IQ and the fluoride levels added to drinking water in the U.S.”

(Source: S. Novella, “Anti-Fluoride Propaganda as News,” NeuroLogica, July 27, 2012; boldface was used to emphasize the conclusion Novella makes in his 2nd quote, and one typographical error was corrected in Novella’s original blog post.)
2. Does the U.S. Trend of IQ Scores Support Claims of a Fluoride Link?
Fluoridation data is from the Centers for Disease Control and Prevention, “Reference Statistics on Water Fluoridation Status,” updated November 22, 2013 and accessible at cdc.gov.
If fluoridated water was responsible for low IQ scores, the average IQ score in the U.S. probably would have **fallen steadily** over these same decades.
But IQ scores did **not** decline. In fact, they steadily improved over these same decades.
Since the 1930s, Americans “have shown an increase of about 3 points in the average IQ score every decade.”

3. Is There Any Research Planned to Study the Alleged IQ-Fluoride Link?
Actually, a 2014 study has been published by the American Journal of Public Health (AJPH)

“No significant differences in IQ because of fluoride exposure were noted. These findings held after adjusting for potential confounding variables…”

Why the AJPH study is much more reliable than the Chinese studies:

- It measured intelligence multiple times over a much wider span of years.
- It used a consistent test to measure intelligence in all of those who were studied.
- It took careful steps to ensure that other factors did not distort the study results.

What we know:

1. **The Chinese IQ studies have significant flaws.** They were designed poorly and did not adequately account for other factors (such as lead, arsenic and parents' educational levels) that are known to affect IQ scores.

2. **New peer-reviewed research shows no link between fluoridated water and IQ scores.** This new study was designed and carried out in a way that makes it much more reliable than the Chinese studies that anti-fluoride activists cite.
For accurate information about fluoridation, you can visit iLikeMyTeeth.org/fluoridation