

The Neurotoxicity of Fluoride: A Ringside View of the Politics versus Science

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Testimony before the BSC

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Personal introduction

- I am a retired professor of chemistry, who specialized in environmental chemistry and toxicology.
- I have spent the last 27 years (since 1996) researching fluoride's toxicity and the water fluoridation debate.
- My findings are detailed in a book I co-authored, *The Case Against Fluoride*.

A Chronology of Fluoride and Neurotoxicity Studies

I've been privy to both the **science** and the **politics** of fluoride's neurotoxicity from the very beginning

The science: In 1995 Mullenix published a groundbreaking animal neurobehavioral study where she found effects she suggested could manifest in children as reduced IQ.

A Chronology of Fluoride and Neurotoxicity Studies

- **1995 and 1996** First two IQ studies from China published in the English literature.

Mullenix 1995, the Politics

On the publication of her paper Mullenix was fired from Harvard's Forsythe Dental center, where she had been head of toxicology.

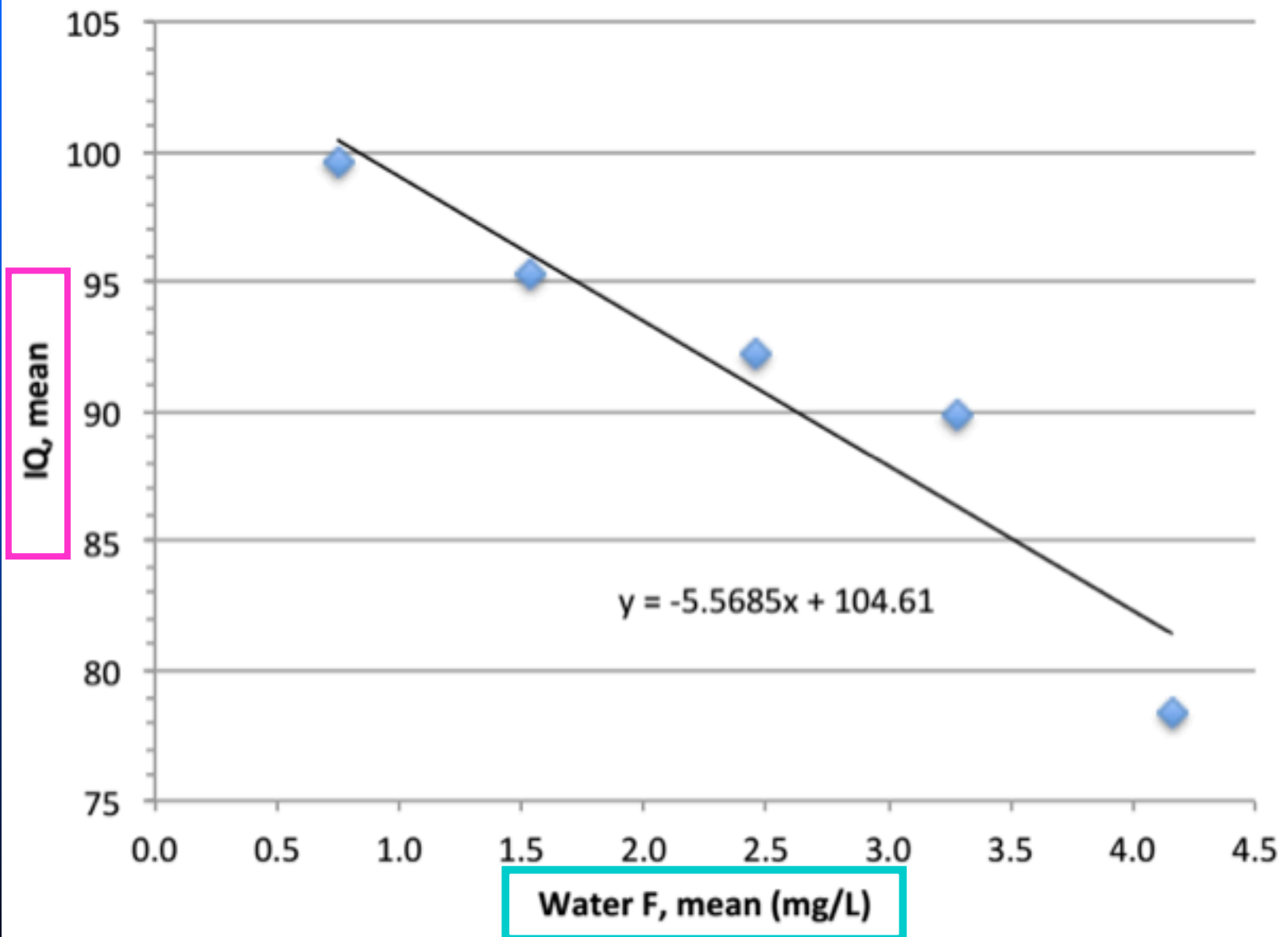
She won a wrongful termination lawsuit against Harvard but her lab had been dismantled and she was never able to resume her research.

Xiang et al. (2003 a,b)

The Xiang 2003 study found no observed threshold down to the lowest exposure of 0.75 mg/L

IQ vs Water F

(for "high F" village Waimao, grouped by water F category)



Xiang et al. (2003 a,b)

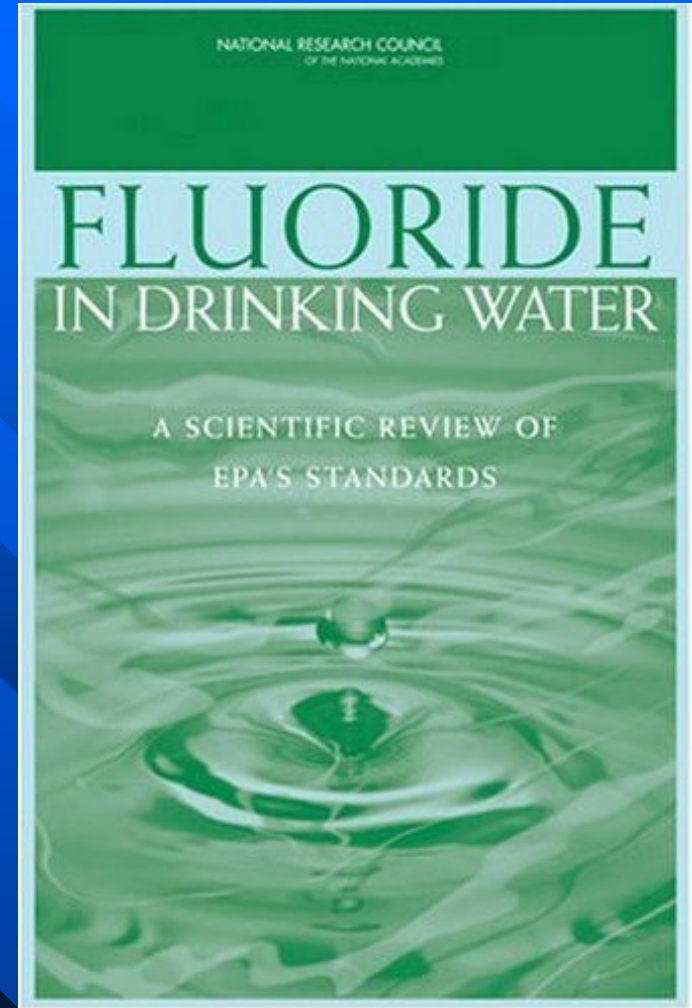
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A Chronology of IQ Studies

2006 – National Research Council publishes a very important review of fluoride's toxicology in water

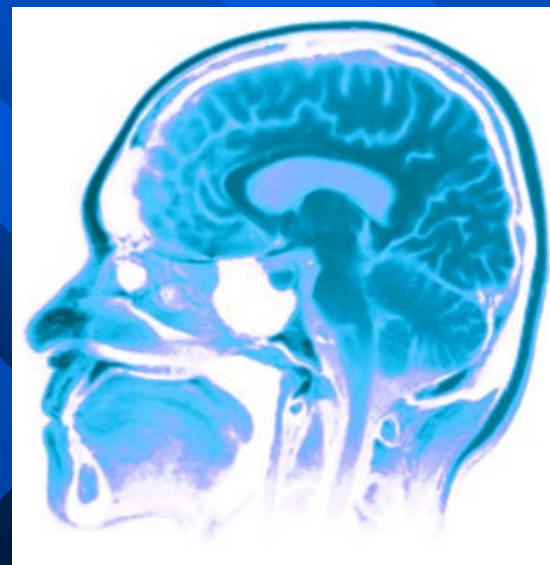


2006

The NRC Review

This report had a whole chapter on neurotoxicity, but at that time there were only 5 human IQ studies available

“it is apparent that fluorides have the ability to interfere with the functions of the brain.”



NRC Review (2006)

- Called for more animal and human research on fluoride's neurotoxicity
- Meanwhile, FAN was organizing the translation of more Chinese IQ studies, hitherto unavailable in the West.

The Harvard Meta-analysis

- In 2012, a collaboration between Harvard and Chinese epidemiologists published a systematic review and meta-analysis

2012

Harvard meta-analysis of 27 studies

- *26 of the 27 studies* had reduced IQ in the higher exposure group
- The pooled difference in average IQ was **-7 IQ points**

2014

More politics:

A review by New Zealand's Chief Science Advisor and the Royal Society of New Zealand.

New Zealand is one of a small number of countries besides the US with a policy of promoting water fluoridation.

Health Effects of Water Fluoridation: a Review of the Scientific Evidence.
Gluckman and Skegg (2014)

The Error

The review erroneously claimed that the loss of IQ in the Harvard meta-analysis was:

“less than one IQ point
and of no practical significance.”

In reality, it was 7 IQ points – which is a HUGE difference and very significant when you are exposing a large population – especially for the most vulnerable.

Their correction was even worse

- The authors had confused Standardized Mean Difference with IQ difference.
- Their mistake was bad enough, but their “correction” was even worse. They simply changed “less than one IQ point” to “less than one standard deviation” without changing their conclusion that this was “of no practical significance”!
- Their sham review was used to support the introduction of mandatory fluoridation into NZ!

And now, the BSC workgroup has made the same serious error in their review of the NTP report.

The BSC WG incorrectly interpreted -0.46 Standardized Mean Difference in the NTP report as “about a half a point in mean IQ” instead of the correct interpretation of about -7 IQ points.

(for the commonly used IQ scale with mean 100 and SD ± 15 points)

from p 345 of BSC WG report:

“The BSC WG has concern about the next sentence in the Discussion section of the draft M-A [Meta-Analysis] Manuscript: “For example, a 5-point decrease in a population’s IQ, would nearly double the number of people classified as intellectually disabled (reference 55).” Table 2 of the M-A Manuscript lists the Overall Mean Effect on IQ in 55 studies as -0.46 (-0.55, -0.37). Given that the mean effect size is ~ a half a point in mean IQ ... the BSC WG recommends that the authors present an example more consistent with their data.

Returning to the Chronology of IQ Studies

In 2016 FAN nominates fluoride for systematic review by NTP and BSC accepts nomination.

A Chronology of IQ Studies

2017 – A major advancement in the scientific evidence of fluoride neurotoxicity with the publication of the first of several **HIGH QUALITY** studies funded by **NIEHS**:

Bashash et al 2017

Bashash et al 2018

Green et al 2019

Till et al 2020

Farmus et al 2021

But the politics hasn't changed! No matter the quality of the studies F-promoters doggedly continue to deny their relevance to their fluoridation program.

Politics with the NTP review

- Based on FOIA requests we now know the documents you are reviewing today were not released willingly. They are only available because of a court order that FAN obtained.
- Fluoridation promoters inside and outside HHS did not want the public to see the NTP report so they had the assistant director of HHS block it just days before its planned public release on May 18, 2022
- HHS tried to keep all the documents secret, including the intended final monograph, external peer-review comments, internal HHS agency comments, and all responses and revisions from NTP.

Dr. Linda Birnbaum

Director of NTP and NIEHS 2009-2019



“As someone who believes deeply in NTP’s science-based mission, I am concerned by the recent course of events with the fluoride monograph. The decision to set aside the results of an external peer review process based on concerns expressed by agencies with strong policy interests on fluoride suggests the presence of political interference in what should be a strictly scientific endeavor.

Political interference in NTP’s scientific evaluations, real or reasonably perceived, will erode and undermine the trust and confidence in NTP’s work that is essential to NTP effectively carrying out its mission.”

Declaration made under oath, 2023

Message to the BSC

- Please protect the NTP and NIEHS from political interference
- Please provide one place where honest science can inform public health policy
- Please allow the public to have one entity in which they can trust when it comes to the toxicity of chemicals which impact their daily lives.