



Fluoride Action Network  
a project of the  
American Environmental Health Studies Project  
<http://fluoridealert.org/>

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Via certified mail and electronic mail

June 23, 2021

Dear Dr. Hacker:

May I say at the outset how much I appreciate in this very difficult period for the CDC that you have taken time to represent Dr. Walensky on the issue of fluoride's neurotoxicity as it relates to CDC policy.

### **Request for meeting**

I have now shared your response with the other 111 signers of our letter. As we believe the matter is urgent, before we respond to the arguments in your letter (see below) we would request a Zoom meeting with yourself and anyone else you may wish, together with the following experts in the field of neurotoxicity who have each agreed to present the latest science: Dr. Linda Birnbaum (former director of the National Institute of Environmental Health Sciences, NIEHS/NTP), Dr. Philippe Grandjean (the lead author of the Benchmark Dose analysis, discussed below), Drs. Bruce Lanphear and Christine Till (key authors of two of the NIH-funded IQ studies), and Chris Neurath (research director for the Fluoride Action Network, FAN).

We request this meeting because we believe the current and emerging science provides strong evidence that exposure to fluoride at levels associated with water fluoridation can have long term adverse effects on children's brains ranging from cognitive impairment to functional neurological disorders such as attention-deficit hyperactivity disorder (ADHD). Indeed, numerous experts have now likened the effect size to that of childhood lead exposure.

Despite the fact that the most important studies on neurotoxicity have been funded by the NIH, neither pregnant women nor parents who formula-feed their infants have been warned by the CDC to avoid fluoridated water. We feel this needs CDC's urgent attention.

We believe hearing from those directly involved in both the research and risk assessment in this matter would be a positive step to address this serious public health concern.

### **Response to the specific comments in your letter**

Your letter quoted excerpts from a cover letter from Dr. Savitz, chairman of the NASEM (National Academies of Science, Engineering and Medicine) committee that has twice peer-reviewed the National Toxicology Program (NTP) review of fluoride's neurotoxicity. However, we believe that these quotes don't do justice to either the NTP review itself or to the essence of the NASEM peer review.

The Fluoride Action Network is on record as praising the bulk of the NTP review while rejecting one specific claim made in both drafts ([http://fluoridealert.org/content/bulletin\\_11-20-20/](http://fluoridealert.org/content/bulletin_11-20-20/)). For a more extensive analysis of the NTP review by FAN's research director Chris Neurath see <http://fluoridealert.org/wp-content/uploads/neurath-2020.fan-dose-response-assessment-of-ntp-studies-with-corrections.pdf>.

In the conclusions to their first draft the NTP authors state:

**Conclusions:** NTP concludes that fluoride is presumed to be a cognitive neurodevelopmental hazard to humans. This conclusion is based on a consistent pattern of findings in human studies across several different populations showing that higher fluoride exposure is associated with decreased IQ or other cognitive impairments in children. However, the consistency is based primarily on higher levels of fluoride exposure (i.e. >1.5 ppm in drinking water). When focusing on findings from studies with exposures in ranges typically found in the United States (i.e., approximately 0.03 to 1.5 ppm in drinking water, NHANES (Jain 2017)) that can be evaluated for dose response, effects on cognitive neurodevelopment are inconsistent, and therefore unclear.

In our view, the claim that the studies conducted at less than 1.5 ppm fluoride "are inconsistent and therefore unclear" is incorrect. The implied threshold of 1.5 ppm does not exist. Indeed, as we make clear below, the highest quality studies conducted to date, namely the four NIH funded studies ([Bashash 2017](#), [Bashash 2018](#), [Green 2019](#), [Till 2020](#)), all found lowered IQ or increased ADHD at 0.7 ppm (the level recommended by the CDC to protect against tooth decay) or equivalent doses.

However, as FAN has already pointed out, even if we were to accept the erroneous notion of a threshold of 1.5 ppm, that would be insufficient to protect the whole population of

children drinking water at 0.7 ppm from this serious effect. It simply does not offer an adequate “margin of safety” to protect either for variation in dose or for the full range of sensitivity expected in a large population, which includes those most susceptible to harm.

### **The two NASEM quotes**

I will consider the two quotes from the NASEM cover letter in turn.

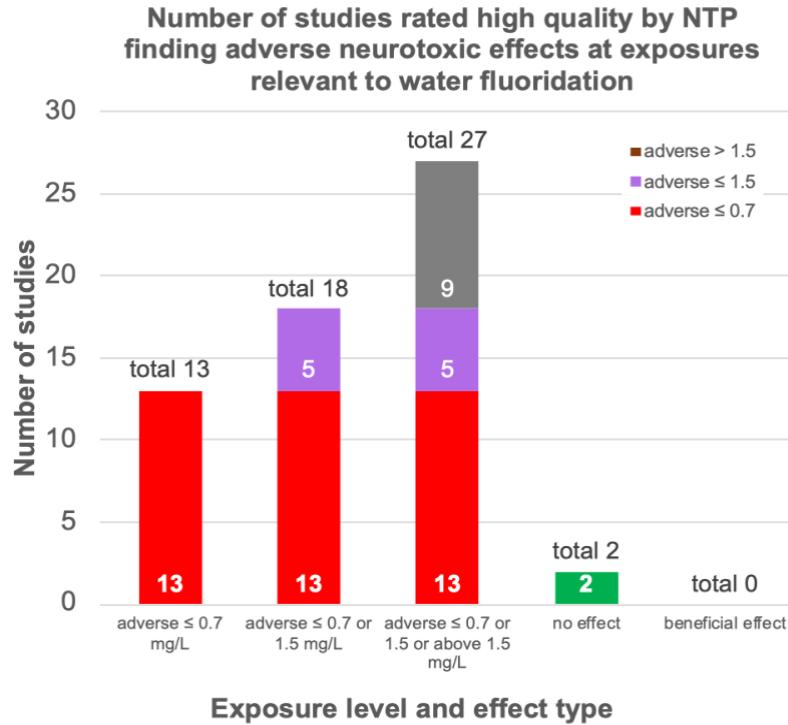
- 1) **“Much of the evidence presented comes from studies that involve relatively high fluoride concentrations.”**

What the NASEM reviewers have done here is to drown out the important findings of the highest quality studies with the more numerous lower quality studies. Historically, a large number of IQ studies from China published between 1988 and 2017, comparing children’s IQ in high-exposed to low-exposed villages, were highly consistent in showing a lowering of IQ. These laid down a backdrop of concern (see Choi et al, 2012) that triggered the NIEHS (a division of the NIH), among other agencies, to fund studies of a more rigorous design. These were conducted at levels of fluoride experienced in artificially fluoridated communities.

In terms of *quality*, the four NIH studies published since 2017 are the highest quality design of all of the neurotoxicity studies conducted to date. Importantly, they specifically follow the WHO recommendations for evaluating health risks in children associated with chemical exposures ([WHO 2011](#)) by using validated biomarkers of individual exposures in well-designed prospective cohort studies of pregnant women, infants, and children with a longitudinal capture of exposures at critical windows and sensitive neurological end-points during childhood development. Most importantly, these four studies were all conducted in communities which were either fluoridated or had exposures that are typical of fluoridated communities at 0.7 ppm in the USA. All four studies found a significant lowering of IQ or increase in ADHD associated with fluoride exposure.

In terms of *quantity*, of the 29 human IQ studies for which the NTP gave a high-quality rating (i.e. low risk of bias), *thirteen* found a lowering of IQ at or below 0.7 ppm; *five* studies found a lowering of IQ at or below 1.5 ppm and *nine* studies found a lowering of IQ above 1.5 ppm.

The figure below, prepared by FAN Research Director Chris Neurath, presents this information graphically (based on [Neurath 2020](#)):



2) **“(The) monograph cannot be used to draw conclusions regarding low fluoride exposure concentrations, including those typically associated with drinking water fluoridation”**

In the *body* of the NASEM review the sentence (above) that you quote from Dr. Savitz’s cover letter was followed by this sentence,

“Drawing conclusions about the effects of low fluoride exposures (less than 1.5 mg/L) would require a full dose–response assessment....”

We agree with NASEM on this point. Fortunately, such a full dose-response analysis was published by Grandjean et al in the journal *Risk Analysis* on June 8, 2021 ([Grandjean et al 2021](#)).

The authors used a standard EPA risk assessment method (a Benchmark Dose Analysis) to predict that **a loss of one IQ point (in offspring) would occur at a maternal urine fluoride level of 0.2 ppm**. Studies in fluoridated communities in California and Canada indicate an average value in pregnant women 4 to 5 times higher than 0.2 ppm ([Uyghurturk 2020](#), [Riddell 2021](#)). Since this is a linear relationship it would translate into an average loss of 4 to 5 IQ points for children born to women drinking fluoridated tap water at 0.7 ppm.

An average 4 to 5 IQ point loss would further translate for an individual into an average loss of up to \$90,000 lifetime earnings<sup>1</sup> and at the population level it would approximately halve the number of gifted children (IQ > 130) and increase by about 50% the number of mentally challenged children (IQ < 70) ([Schmidt 2013](#)).

In your letter you state: “To date, CDC has not seen compelling changes in the evidence that alters its assessment of the favorable balance of benefits and potential harms at currently recommended levels for community water fluoridation in the U.S.”

Clearly, the signers of our letter disagree with your agency about what constitutes “compelling changes in the evidence” on potential harms, and specifically the dangers posed on the developing brain that have been found in the NIH-funded studies, coupled with the Grandjean et al (2021) BMD dose-response analysis.

For these reasons we feel a meeting between you and Drs. Birnbaum, Grandjean, Till, and Lanphear as soon as it can be arranged is crucial for protecting children’s health.

Many thanks for your consideration in this urgent matter.

Sincerely,

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<sup>1</sup> It is generally accepted by the EPA and others that a loss of one IQ point results in an estimated reduction in life-time earnings for an individual of \$18,000 ([Grandjean 2012](#)). Thus, a loss of five IQ points would result in a loss of \$90,000 in lifetime earnings (5 X 18).

**Electronic copies sent to**

Linda Birnbaum  
Philippe Grandjean  
Bruce Lanphear  
Chris Neurath  
Christine Till

**Hard copies mailed to**

Dr. Rochelle Walensky and Dr. Anne Schuchat