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Comments to: NASEM Committee to Review the Revised NTP Monograph on Systematic Review of Fluoride Exposure and Neurodevelopmental and Cognitive Health Effects

1) I have followed this issue since 1996, when the first two IQ studies from China[1,2] were published and a year after the Mullenix[3] animal study was published.

2) The most revealing observation from the NIH funded studies published since 2017 (Bashash 2017[4], 2018[5]; Green 2019[6]; Till 2020[7]) is that the most vulnerable period of exposure for neurological harm from fluoride is during fetal development and during early infancy (particularly from bottle feeding). This was only INDIRECTLY addressed in previous studies.

3) Most agree that these studies[4,5,6,7] were the best conducted studies to date – and they were conducted among those exposed to fluoridated water (at or around 0.7 ppm) or equivalent doses (from fluoridated salt).

4) In my view, the timing of exposure is equally important as the dose. In the Bashash 2017[4] study of 4 year-olds - cognitive effects were observed down to 0.2 ppm of fluoride in mother's urine with no obvious threshold. Incredibly, the NTP managed to ignore this finding in its meta-analysis of all the studies, erroneously suggesting that Bashash, 2017[4] showed NO LOWERING of IQ!

5) These studies have **consistently** found a lowering of IQ and other cognitive effects at doses experienced in artificially fluoridated communities. Why doesn't the NTP acknowledge this consistency? Instead, they have been essentially diluted out of these important findings by other inferior studies in the various meta-analysis conducted by the NTP. Chris Neurath's analysis (which you should receive today), has shown how some of this dilution was accomplished. Based on his analysis, a proper dose-response assessment using the evidence identified by NTP supports a conclusion of "presumed hazard" or at least "suspected hazard" from artificial water fluoridation.

6) Turning to studies at 1.5 ppm or above. According to the US EPA the 95th percentile consumers of water drink more than twice as much water as the average consumer. They will therefore get an **internal dose** twice as great as the average person drinking 0.7 mg/L but the same as the average person drinking 1.5 mg/L water. **In other words, the NTP monograph finding that the evidence is strong at or above 1.5 mg/L for developmental neurotoxicity means for 5% of Americans drinking fluoridated**

water at 0.7 mg/L there will be a high confidence of their being harmed.

7) This can be seen in the broader context of the need of a margin of safety of 10 (the normal intra-species variation factor) when extrapolating from a study finding harm to find a dose protective of a large population. Assuming for the **average child, water is its major source of fluoride,** and water concentration is a close surrogate to dose, 1.5 ppm gives only a factor of 2 to protect all fetuses, infants and children consuming water at 0.7 ppm.

8) It should also be noted, that although breast fed infants receive the lowest fluoride intake by bodyweight (<0.001 mg/kg/day) of all age-groups (Ekstrand[8] et al. 1981), this situation changes when infants are fed formula reconstituted with fluoridated water. Formula-fed infants receive a dose, approximately 100-200 times the dose a breast-fed baby would receive. In addition, as noted by the Natural Research Council, "On a per-body-weight basis, infants and young children have approximately three to four times greater exposure [to drinking water] than do adults… Among individuals with an average water-intake rate, infants and children have the greatest total exposure to fluoride… in drinking water." (NRC 2006, at 3)." Moreover, they have an impaired ability to excrete the fluoride they ingest, retaining up to 87% of the absorbed dose (Ekstrand[8]).

References

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