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Alderman James Bohl
Milwaukee City Hall
Room 205
200 E. Wells Street
Milwaukee, WI 53202

PROPOSAL TO REDUCE FLUORIDE CONCENTRATION IN WATER AND ADD PEDIATRIC LABELS

Dear Alderman Bohl,

As a pediatrician and environmental expert, I commend you for your recent amendment to add pediatric labels to your proposal to reduce fluoride concentration in the City of Milwaukee's municipal water supply. The significant number and degree of risks related to water fluoridation heavily outweigh the single benefit of this controversial practice based on inconclusive science. Reasons to support your pediatric considerations are outlined below.

Also, upon review of the industry official's report from the Wisconsin Dental Association, I found it to lack any mention of basic science or toxicology. Proponents of water fluoridation failed to produce any of the 3,000 scientific articles claimed to support this practice. Instead, they submitted 1) an industry report from the American Dental Association (which has not disclosed their financial conflicts of interests) 2) an article from a foreign country, instead of a more applicable US research study and 3) a foreign country review.

TOXICOLOGY

The 2011 [Milwaukee Water Quality report](#) utilizes specific terminology that the water is *contaminated* with fluoride, not *enriched, supplemented or medicated*. Contamination is synonymous with pollutant, toxin, toxicant and poison, and therefore, it must be dosed, regulated and monitored in accordance with current medical and scientific standards. The CDC's [Agency for Toxic Disease Registry](#) confirms fluoride's classification as a toxin, even at relatively low levels found in water. Therefore, according to [EPA standards](#), toxic substances that are orally consumed **must be dosed** to ensure safety, because if the fluoride exposure dose exceeds the EPA's reference dose of 0.08mg/kg/d, it is toxic. Here is how the exposure dose is calculated:

Exhibit 1. Generic Exposure Dose Equation

$$D = C \times IR \times AF \times EF / BW$$

where,

D	=	exposure dose
C	=	contaminant concentration
IR	=	intake rate of contaminated medium
AF	=	bioavailability factor ¹
EF	=	exposure factor
BW	=	body weight.

CHILDREN

They are most sensitive to environmental toxins, including fluoride, and face disproportionate exposure and health burden.

- 1) Since children consume more water than adults each day, on a body weight basis, they have a greater exposure to fluoride.
- 2) Fluoride is more toxic to children, because when exposed to the same amount of toxin, they receive a greater dose based on their smaller body weight (AAP Pediatric Environmental Handbook, 2003). The motto of toxicology is *the dose determines the poison*. For example, if a newborn baby weighing 6 lbs. drank more than 7 oz. of formula reconstituted with fluoridated water, they would exceed safety standards, making fluoridated water unsafe for them. If the daily adequate intake of 24 to 30 oz. is consumed, they would exceed the EPA reference dose by more than 4 times the safety limit!
- 3) Fluoride is unsafe for babies under 6 months old, no fluoride is recommended due to concerns of toxicity ([American Academy of Pediatrics Council on Nutrition Official Policy statement, 1995](#))
- 4) Underdeveloped kidneys: Children have a lower excretion of fluoride in urine, which is reabsorbed back into the bloodstream and bioaccumulates with the potential to cause ongoing toxic effects ([Spak et al. Renal Clearance of Fluoride in Children and Adolescents, Pediatrics 1985;75;575-579](#)).
- 5) An infant and child's early timing of exposure to systemic fluoride during critical periods of organ development places them at greater risk of toxicity. The motto of pediatric toxicology is *the timing determines the poison*.
 - a. A greater amount of absorbed fluoride-90%- is retained by the skeleton of newborns ([Spak et al. Renal Clearance of Fluoride in Children and Adolescents, Pediatrics 1985;75;575-579](#), due to fluoride's high affinity for calcium.
 - b. Several research articles, including from the [Journal of the American Dental Association](#), attest to dental fluorosis as evidence of chronic fluoride overdose and toxicity prior to 8 years old, where fluoride causes demineralization, replacing the strong natural calcium hydroxyapatite mineral with fluorohydroxyapatite causing the white and brown opacities, mottling and pitting. According to the [National Academy of Sciences](#), fluorosis is not cosmetic. It is an adverse health effect and these scientists have expressed valid concerns regarding fluoride's safety.

- c. Greater rates of dental fluorosis seen in children. According to the [CDC's Prevalence and Severity of Dental Fluorosis in the US](#) report, dental fluorosis is seen in a third of children and 41% of teens. This occurs while exposed to low concentrations of 1 ppm. There is no study proving that 0.7 ppm is safe.
- d. Babies are like sponges and have a greater skin absorption rate of toxins than adults due to their thin keratin layer, and sometimes exceeding oral consumption rates ([Mancini. Skin, Pediatrics 2004;113;1114](#)) This poses great concern during the bathing process.
- e. Blood-brain barrier is underdeveloped in babies, and therefore, fluoride can cross and increase the risk of low IQ, autism, developmental and behavioral problems and other neurodevelopmental conditions ([Valdez-Jiminez. Effects of fluoride on the central nervous system, Neurologia 2011;26\(5\): 297-300](#)). A study just released last week confirmed fluoride's adverse effect lowered IQ in children ([Choi. Developmental fluoride neurotoxicity: A systematic review and meta-analysis, Environmental Health Perspectives July 2012](#))

MEDICAL IMPLICATIONS

This proposed legislation is significant, and the recent hearing was the best and longest healthcare debate I have witnessed. The city council has taken into account the basic science, latest research and expert recommendations from diverse perspectives of dentists, physicians, scientists, environmental advocates, lawyers, lobbyists, teachers and residents, to decide on a public health practice to improve health outcomes. This is an inadvertent application of translational medicine, a new field that has the universal theme of "from benchside to bed to community". Hopefully, the medical and dental community will also become proactive and monitor and screen for fluoride consumption and exposure to ensure safety, and screen for adverse health effects from fluoride-dental fluorosis, skeletal fluorosis, nail fluorosis, IQ, hypothyroidism, arthritis, destruction of pineal gland, low IQ, neurodevelopmental conditions.

Hopefully the city council will revisit the original proposal to discontinue water fluoridation in the near future, or at least consider the impact on the other vulnerable groups mentioned above.

Sincerely,

Yolanda Whyte, MD

Pediatrician and Environmental health expert
Member, American Academy of Pediatrics Council on Environmental Health
Member, National Medical Association Environmental Health Task Force
Member, Physicians for Social Responsibility