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Is the tide is beginning to turn for community water fluoridation?

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ABSTRACT

Three recent developments, of (i) a USA District Court finding that community water fluoridation at 0.7 mg/L presents an unreasonable risk of injury to health; (ii) a Cochrane Library report finding the benefits of community water fluoridation are slight and less than previously found; and (iii) the State Surgeon General of Florida recommending that community water fluoridation is stopped in his state, raise a question as to whether or not the tide is beginning to turn against the practice of adding fluoride to community drinking water in order to reduce dental caries.

Key-words: *Cochrane Library review of water fluoridation; Recommendation against water fluoridation by Florida Surgeon General; US District Court decision on water fluoridation.*

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Three recent events are relevant to the practice of community water fluoridation.

Firstly, on 24 September 2024, Judge Edward M. Chen, United States District Judge, United States District Court, Northern District of California, USA, issued his findings of fact and conclusions of law in an 80 page judgement on the seven year trial of Food & Water Watch, Inc. et al. v Environmental Protection Agency (EPA) et al. The Court found that the Plaintiffs had met their burden of proof in establishing, by a preponderance of the evidence, that community water fluoridation at 0.7 mg/L presents an unreasonable risk of injury to health under the Amended Toxic Substances Control Act (TSCA) and that the EPA was thus obliged to take regulatory action [1]

The Court considered extensive evidence, including a 324 page National Toxicology Programme report[2] and testimony by Philippe Grandjean. The Court found that a pooled benchmark dose analysis by Grandjean et al. concluded that a 1-point drop in IQ of a child is to be expected for each 0.28 mg/L of fluoride in a pregnant mother's urine. This was highly concerning to the Court, because maternal urinary fluoride levels for pregnant mothers in the United States ranged from 0.8 mg/L at the median to 1.89 mg/L depending upon the degree of exposure. Not only was there an insufficient margin between the threshold for developmental neurotoxicity and these exposure levels, but for many, the exposure levels exceeded the threshold for developmental neurotoxicity of 0.28 mg/L.

Grandjean et al found, in the joint analysis of their three cohorts from Denmark, Mexico and Canada, a statistically significant association between urine-fluoride and IQ, with a benchmark concentration (BMC) for a difference of 1 IQ point of 0.45 mg/L, which was slightly higher than the BMC previously reported for the two North American cohorts alone, and a bench mark lower confidence limit (BMCL) of 0.28 mg/L.[3] They concluded that, as the BMCL reflects an approximate threshold for developmental neurotoxicity, the results suggested that pregnant women and children may need protection against fluoride toxicity.

Secondly, on 4 October 2024, a 300 page Cochrane Library systematic review was published entitled *Water fluoridation for the prevention of dental caries (review).*[4] This was an update of the first Cochrane review on this subject, published in 2015, and it focused on contemporary evidence

about the effects of community water fluoridation (CWF) on dental caries. The authors concluded that contemporary studies indicate that the initiation of CWF may lead to (i) a slightly greater reduction in dmft (ii) a slightly greater increase in the proportion of caries-free children, but with smaller effect sizes than in the pre-1975 studies; and (iii) a slightly greater change over time in the proportion of caries-free children with the primary dentition (Mean difference [MD] –0.04, 95% CI -0.09 to 0.01; p = 0.12; 2 studies, 2908 children), and the permanent dentition (MD –0.03, 95% CI –0.07 to 0.01; p = 0.14; 2 studies, 2348 children). These low-certainty findings (a 4 percentage point difference for the primary dentition and a 3 percentage point difference for the permanent dentition, equating to a difference in dmft of approximately one-quarter of a tooth) favoured CWF. These effect estimates include the possibility of benefit and no benefit. No contemporary data were available for adverse effects.

There was insufficient evidence to determine the effect of cessation of CWF on caries and whether water fluoridation results in a change in disparities in caries according to socioeconomic status. They found no eligible studies that report caries outcomes in adults.

They noted that the implementation or cessation of CWF requires careful consideration of this current evidence, in the broader context of a population's oral health, diet and consumption of tap water, movement or migration, and the availability and uptake of other caries-prevention strategies. Acceptability, cost-effectiveness and feasibility of the implementation and monitoring of a CWF programme should also be taken into account.

Thirdly, on 22 November 2024, Dr. Joseph A. Ladapo, the State Surgeon General of Florida, USA, the state with the third largest population in the USA with over 22 million residents, announced guidance recommending against community water fluoridation, due to the neuropsychiatric risk associated with fluoride exposure.[5] He urged local policymakers to stop adding fluoride to public drinking water saying the practice was tantamount to "public health malpractice."[6]

These three recent developments, of (i) a District Court report finding that that community water fluoridation at 0.7 mg/L presents an unreasonable risk of injury to health; (ii) a Cochrane Library report finding the benefits of community water fluoridation are slight and less than previously; and (iii) the State Surgeon General of Florida recommending that community water fluoridation is stopped in his state, raise a question as to whether or not the tide is beginning to turn against the practice of adding fluoride to community drinking water in order to reduce dental caries.

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REFERENCES

[1] Findings of fact and conclusions of law. Signed by Judge Edward M. Chen on 9/24/2024. (emclc2) (Entered: 09/24/2024). Case 3:17-cv-02162-EMC. Document 445. Filed 09/24.24. Food & Water Watch, Inc., et al., Plaintiffs v. United States Environmental Protection Agency, et al., Defendants. United States District Court, Northern District of California. pp. 80. Available from: https://www.courtlistener.com/docket/6201332/445/food-water-watch-inc-v-environmental-protection-agency/

[2] National Toxicology Program, Public Health Service, U.S. Department of Health and Human Services. NTP monograph on the state of science concerning fluoride exposure and neurodevelopment and cognition: a systematic review NTP Monograph 08. Research Triangle Park, North Carolina, USA: National Toxicology Program, Public Health Service, U.S. Department of Health and Human Services. 2024 Aug Available from: https://ntp.niehs.nih.gov/publications/monographs/mgraph08

[3] Grandjean P, Meddis A, Nielsen F, Beck IH, Bilenberg N, Goodman CV, et al. Dose dependence of prenatal fluoride exposure associations with cognitive performance at school age in three prospective studies. Eur J Public Health 2024;34(1):143-9. Available from: https://doi.org/10.1093/eurpub/ckad170

[4] Iheozor-Ejiofor Z, Walsh T, Lewis SR, Riley P, Boyers D, Clarkson JE, Worthington HV, Glenny AM, O'Malley L. Water fluoridation for the prevention of dental caries. Meta-Analysis Cochrane Database Syst Rev 2024 Oct 4;10(10):CD010856. doi: 10.1002/14651858.CD010856.pub3. Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010856.pub3/full

[5] Labado. J. Guidance for community water fluoridaton. Florida Health, Nov 22, 2024. Available from: https://www.floridahealth.gov/_documents/newsroom/press-releases/2024/11/GUIDANCECommunityWaterFluoridation.pdf?utm_medium=email&utm_source=govdelivery

[6] Walsh S-M. Florida Surgeon General Ladapo bucks CDC, calls fluoridating water "health malpractice.". Lakeland Ledger. Nov 22, 2024. Available from: https://www.theledger.com/story/news/state/2024/11/22/florida-surgeon-general-coming-to-winter-haven-to-talk-about-water/76494300007/