

Brief History of Water Fluoridation

By

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Regroupement de citoyen(ne)s pour une eau saine à Richmond

Présentation de l'auteur :

Nick Fonda détient une maîtrise de l'Université de Sherbrooke et a enseigné pendant plusieurs années aux niveaux secondaire et primaire. Il s'est impliqué dans divers organismes communautaires, en particulier la Société d'histoire du comté de Richmond où il fut président entre les années 2009 et 2012. Lors des élections provinciales en 2012, il s'est présenté comme candidat pour le Parti Vert du Québec. Il contribue régulièrement au quotidien *The Record* publié à Sherbrooke, et à la revue *Quebec Heritage News*. Il est auteur de deux livres : *Roads to Richmond* et *Principals and Other Schoolyard Bullies*.

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The glass of water we drink will change in taste or flavour according to where on the planet we happen to be standing. Drinking water comes from wells, from lakes, from rivers. According to the geological formations over and through which that water has travelled, it will carry traces of any number of elements. In certain places such as the American mid-west the water carries a certain amount of fluoride.

The effect on teeth of naturally occurring fluoride in water was discovered through the efforts of an American dentist, F.S. McKay, who noticed a high incidence of what was then called "mottled enamel" among his patients; many of them had teeth that were permanently marked by white, or yellow, or brown stains. In 1916, he published a paper on his observations and postulated that "mottled enamel" was caused by a toxic element in the water. He also made the observation that mottled enamel had a positive side effect: a much lower incidence of cavities, or dental caries.

Fifteen years later, in 1931, the United States Public Health Services identified the toxic agent as fluoride (in layman's terms, a variant of the element fluorine carrying an extra electrical charge). The Health Service research showed that 0.6 parts per million caused mild but detectable dental fluorosis in a small percentage of the population, but at fluoride concentrations of 2.0 ppm, the incidence of fluorosis became "an acute and urgent public health problem."

During the mid-1930s a number of communities in the United States started treating their water supply to remove fluoride with the intention of eliminating dental fluorosis. However, before the end of the decade, the practice of removing fluoride was called into question by G. J. Cox, a biochemist in dental research at the Mellon Institute of Industrial Research (which has since become the Mellon Carnegie University). Cox, at the end of the decade, advocated adding fluoride to water where it did not occur naturally.

At the same time, the USPHS continued its research. Scientists conducted experiments on animals and found that dietary fluoride supplements led to reduced carie rates. Through extensive surveys they found that at a concentration of 1.0 ppm, naturally fluoridated water resulted in 60% fewer cavities while affecting 10% of the same population with the mildest forms of dental fluorosis. In terms of public health, the USPHS judged this outcome to be acceptable. In 1943 (in response to active lobbying) it set 1.0 ppm as the standard for allowable fluoride concentration. The Health Service was also cognizant of possible secondary effects of fluoridated water. While there were no cases in the areas studied in the United States, the Health Service was aware that in some countries cases of severe skeletal damage occurred in areas where fluoride concentrations ranged from 1 to 3 ppm. When the idea of adding fluoride to drinking water was first proposed, the USPHS took a neutral stance, neither endorsing nor discouraging the practice.

It was in the early 1940s, and primarily in Wisconsin, that municipalities began fluoridating the water supply. By the mid-century, there were more towns and cities fluoridating water in Wisconsin (50) than in the rest of the United States combined (47). The means by which certain communities came to have fluoridated water, and others did not, became a pattern that endures even today.

Acting on the findings from the Mellon Institute of Industrial Research, a group of Wisconsin dentists including John G. Frisch and Francis A. Bull (who was the State's Dental Health Officer) began very actively promoting water fluoridation. They devoted their spare time to speaking engagements all over the state, addressing Parent-Teacher Associations, women's clubs, and civic groups. They organized political campaigns to persuade local officials to approve of fluoridation. At one point, their slogan was "50 by 50" which meant that they wanted to have 50 towns and cities using fluoridated water by 1950, a goal they achieved.

Frisch, who was described by a contemporary as "a man possessed" for whom fluoridation was "a religion" was tenacious but also earned many detractors. Francis Bull was also less than forthright. He admitted that evidence in favour of fluoridation was not as strong as it might have been. He advised his followers to discredit objections of those opposed to fluoridation and, in the interest of political expediency, to never admit the possibility of doubt or disagreement over scientific evidence. Frisch and Bull adopted a style and tactics that included personal attacks on those who opposed fluoridation for any reason. They didn't restrict themselves to scientific debate but rather pushed fluoridation into the political realm.

However, they also provoked a backlash. In John Frisch's hometown of Madison, the city set up an expert panel (including several professors from the University of Wisconsin) to examine fluoridation. Citing primarily the concern that the benefits of

fluoridation were not clearly demonstrated and that side-effects were not sufficiently studied, the panel recommended not to fluoridate the city's water. But Frisch got the last word. He organized a lobbying effort which eventually convinced the city council to disregard the recommendations of its expert panel and the city began fluoridating two years later, in 1947.

The move towards fluoridating water was largely based on lobbying. Frisch, Bull and those promoting fluoridation focussed their attention on winning over what might be called the medical establishment. By the end of the 1940s, any number of professional associations (American Institute of Nutrition, American Association of Industrial Dentists, American Academy of Pediatrics) including the United States Public Health Service had declared themselves in support of fluoridation.

Still, the backlash that Frisch had experienced in his hometown of Madison was not an isolated case. By the 1950s, in many communities, the proponents of fluoridation were met by local, grass-roots opponents who were sometimes able to organize effective political campaigns and force a referendum. In most cases, if fluoridation was brought to a civic referendum, it was defeated. If citizens didn't organize themselves to protest, they found themselves with fluoridated water.

The almost equal balance between fluoridated and non-fluoridated communities which existed in Wisconsin in 1950, is the same ratio that is found across the United States today.

Edward Groth, writing 40 years ago, and whose doctoral thesis, *Two Issues of Public Policy*, was used extensively for this brief paper¹, made an observation which is sadly accurate even today.

“Experts on both sides of this issue,” he wrote, “have shown a tendency to cite evidence selectively, ignoring, or dismissing as not valid, data that do not support the argument. Proponents and opponents alike have been very uncritical in accepting as valid that evidence which matches the policy position they wish to promote, and have been highly critical of, and attempted to find all potential flaws which might invalidate, any research that has implications contrary to those desired.”

Reference

- (1) Groth E. 1973. *Two Issues of Science and Public policy*....Univ. Microfilm.