THE FLUORIDE CONTROVERSY - by Kris Stahl, September 18, 2025

Torch Club of the Fox Valley

Introduction

Most people are aware that there is a controversy today related to fluoride. We hear about it on television and in podcasts, and read about it in our newspapers and magazines. Fluoride has been used in public water supplies for many years. The controversy is whether to continue using it or to discontinue using it.

Fluoride – a compound of fluorine

Fluorine – a nonmetallic halogen element that is isolated as a pale yellowish flammable irritating toxic diatomic gas

-Merriam Webster's Collegiate Dictionary

- Tenth edition, page 449

History:

Fluoride is a mineral that occurs naturally in soil, water and rocks that has been shown to prevent cavities or tooth decay. It has been added to community water supplies and oral care products, such as toothpaste and mouth rinse.

Dental caries is no longer the problem it once was because of the discovery and use of fluoride. Fluoride research began in 1901 when Frederick McKay, a young dental school graduate, moved from the East Coast to open his dental practice in Colorado Springs, Colorado. When he arrived in Colorado, he was shocked to see that many of the local people had grotesque permanent chocolate brown stains on their teeth. McKay could find no reason for the stains, and there was no research to be found in the dental literature of the day. People thought that the stains might be due to eating too much pork, consuming inferior milk, or drinking calcium rich water. (1)

Since no one else had come up with a reason for the brown stains, McKay decided to do his own research to find the source of the problem which was called the "Colorado Brown Stain." Initially he was on his own – most other local dentists were not interested in helping with McKay's investigations. He persevered, though, and other local practitioners eventually joined him. McKay's first big break came in 1909 when Dr. G. V. Black, a renowned dental researcher who had been a skeptic about the Colorado Brown Stain because of it not being reported in any dental literature, went west to see the situation for himself. He had seen a study which had been conducted by the Colorado Springs Dental Society that showed almost 90% of the city's locally born children had signs of the brown stains which Black referred to as "mottled enamel."

Black and McKay did research together until Black's death in 1915. They made two crucial discoveries during those years:

1) They showed that mottled teeth resulted from developmental imperfections in children's teeth. That meant that those people whose permanent teeth had developed without the stains would not get the stains as adults. Young children who were still waiting for their permanent teeth to come in were at high risk for developing the stains.
2) Interestingly, they found that the brown stained teeth were resistant to decay. This finding caused McKay to begin thinking about the possibility of there being some ingredient in the local water supply that resisted the cavities. Black was skeptical about this theory.

In 1923 McKay found the brown stains on children in Oakley, Idaho, where a new communal water pipeline was constructed and connected to a nearby warm spring. McKay advised the town to abandon it and use a different nearby spring. Even though McKay didn't have the full solution yet, his advice was good, and the town saw improvement in those children's teeth in a few years.

McKay continued his research with the help of Dr. Grover Kempf of the U.S. Public Health Service. They traveled to Bauxite, Arkansas, a company town owned by the Aluminum Company of America (ALCOA) to investigate reports of brown stains in the children there, but non-existent in a town just five miles away. Again they looked to the water supply but found no clues. Their work was still worthwhile because H. V. Churchill, ALCOA's Chief Chemist back in Pennsylvania, heard about their findings. He paid particular attention to their findings because ALCOA had spent the last few years dealing with claims that

aluminum cookware was poisonous, and he was worried that the public would stop buying their products if they knew about McKay's findings. Churchill decided to do his own more sophisticated testing in Bauxite. He was very surprised to find that the town's water had high fluoride levels and assumed the water sample was contaminated, so ordered a new specimen which then also showed fluoride in the water. Churchill shared his test results with McKay and suggested he run tests in other towns where the brown stains had been found. McKay followed through with ALCOA's cooperation. Within months McKay had the answer to his 30-year quest – the tooth mottling was caused by high levels of water – borne fluoride. This finding triggered further research into fluoride in 1931 by the Dental Hygiene Unit of the NIH (National Institutes of Health.) The NIH scientists, headed up by Dr. H. Trendley Dean, looked into determining how high fluoride levels could be in drinking water before causing brown stains fluorosis – the mottling of the teeth caused by fluorine or its compounds.

By the late 1930's the NIH scientists found that fluoride levels of up to 1.0 ppm (parts per million) in drinking water did not cause enamel fluorosis in most people and only mild enamel fluorosis in a small percentage of people. Dr. Dean then wondered whether adding fluoride to drinking water at safe levels would help fight tooth decay. In 1944 the City Commission of Grand Rapids, Michigan, after consulting with the PHS (Public Health Service) and other public health organizations, voted to add fluoride to its public water supply. In 1945 Grand Rapids became the first city in the world to fluoridate its drinking water. It became a 15-year long project during which time researchers monitored Grand Rapids' 30,000 school children. After 11 years they found that the caries rate in children born after fluoride was added to the water supply dropped by more than 60%. This was a major scientific breakthrough that promised to revolutionize dental care and for the first time in history, made tooth decay a preventable disease for most people.

And, as they say ------ the rest is history! That may sound like the end of the story about fluoride, and it's here to stay, but let's look at the status of fluoride today. Most of us are aware that today fluoride continues to be the main weapon against tooth decay. It can be found in most toothpastes, over 200 million Americans benefit from water fluoridation projects, and 13 million schoolchildren participate in school-based fluoride mouth rinse programs. Dentistry has become a prevention-oriented profession, thanks to McKay, Dean, and all the other people who researched and identified a problem that they then turned into a solution for the problem (1), (3)

Even though this sounds like fluoride's role in preventing dental caries is firmly established, some people have questioned its benefits and even suggested that fluoride causes certain health problems. Here are some of their concerns:

1) In 2021 about three-fourths of people in the U.S. and one-third of Canadians had fluoride added to their drinking water. In a November 2021 manuscript in the "HHS (Health and Human Services) Public Access" Christine Till and Rivka Green from the Department of Psychology at York University in Toronto, Canada, reported that community water fluoridation now reaches over 400 million worldwide. When they investigated the safety of fluoride exposure in pregnancy, they found studies examining this in North America were nonexistent. A Canadian study was done which revealed that higher fluoride exposure in pregnant women was linked to lower IQ (Intelligence Quotient) scores in young children. Critics of the study attacked the methodology and discounted the significance of the results. Health authorities continued to assure the public of fluoride safety, in spite of the fact that four well-conducted studies over the previous three years consistently linked fluoride exposure in pregnancy with adverse neurodevelopmental effects in babies. Till and Green cautioned the public not to ignore the findings of those recent studies simply because the findings do not conform to widespread beliefs – this could impede the response to early warnings about fluoride as a potential developmental neurotoxin.

2) In 2017 Joe Schwarcz, PhD, reported that while many health authorities claim that "water fluoridation has been one of the most effective and safest public health interventions ever introduced", there are others who say there is a conspiracy among governments, industry, and the U.S. military to change the image of a toxic byproduct of the fertilizer industry to a safe tooth decay preventor – this would allow the toxic byproduct to be disposed of in our drinking water. These anti-fluoridationists say that the risks of fluoride have been kept from the public. Opponents of fluoride have called it "rat poison." Schwarcz cautions us to remember that toxicity is a matter of dosage – fluoride can kill rats and chlorine can be used as a chemical weapon to kill humans, if given a large enough dose of either. Major concerns include the risk of bone fracture, bone cancer, interference with thyroid function, as well as with other biological systems. One valid concern is that it may cause fluorosis of the teeth. Dentists do report that they are seeing more teeth with the hallmark white fluorosis stains in areas where fluoride is added to the water. It is only a cosmetic problem, but

> still a valid concern. One reason for the white stains may be that some people are exposed to too much fluoride. There are other "nebulous" studies that show the possibilities of a rare type of bone cancer in boys, weakening of bones and tooth enamel, and contamination with trace amounts of lead, arsenic and radium. In 1986 the Environmental Protection Agency established 4 parts per million as the contaminant level goal for fluoride in water based on the fact that concentrations above that level weakened tooth enamel. In March 2006 the National Research Council in the U.S. released a report entitled, "Fluoride in Drinking Water: A Scientific Review of the Environmental Protection Agency's Standards" which confirmed the 4-ppm standard, but in actuality the standard used is .07 – 1.2 ppm. Only about one-half of one percent of North Americans drink water that has a natural fluoride content of 4 ppm or more.

The American Dental Association is a strong advocate of adding fluoride to the water and estimates that every dollar spent on fluoridation saves about fifty dollars in future dental expenses. (2)

<u>Where does our government stand on this issue?</u>

On November 4, 2024, NPR (National Public Radio) reported that in a campaign rally in Michigan presidential candidate Robert F. Kennedy, Jr. called for an end to fluoride in the water supply, despite the use of fluoride being considered one of the greatest public health achievements in the 20th century because of it saving billions of dollars each year in dental care. He said that one of his first acts as an official in a new Trump administration would be to "advise all U.S. water systems to remove fluoride from public water." (5) Donald Trump, running for President at that time said, "that sounds OK to me." Dr. Paul Offit, a researcher and physician at Children's Hospital of Philadelphia condemned the promise to remove fluoride from the water, stating that fluoride has been well tested, is not associated with any clear evidence of chronic diseases, and described Robert F. Kennedy, Jr. as a "science denialist." He went on to say that Kennedy "makes up his own scientific truths and ignores the actual truths." (4)

Fluoride in Wisconsin

The Rusk County, Wisconsin, website gives some good background information regarding fluoride in Wisconsin's water supply: In 1946 the Sheboygan Water Utility became the first public water system to fluoridate municipal drinking water for the prevention of tooth decay. Over the years more communities have added fluoride to their drinking water and cite benefits of keeping people from losing their teeth, reducing the need for dentures, fewer people going to the Emergency Room for dental pain, and people spending less money on dental treatment. Evidence shows that fluoridation is inexpensive to maintain and saves money. The typical cost of fluoridating a local water system is between 40 cents and $2.70 per person, per year. (6)

Madeline Heim, a "Report for America Corps" reporter who writes about environmental issues in the Mississippi watershed and across Wisconsin wrote in the "Milwaukee Journal Sentinel" on February 11, 2025,that the Public Works staff in the village of De Forest (a suburb of Madison) noticed a problem – pumps that delivered fluoride to their drinking water supply were showing signs of wear. Because they were aware of the growing debate about the use of fluoride, they questioned village officials as to whether they should replace the pumps. De Forest then became part of the national controversy over fluoride. On February 4, 2025, De Forest officials voted 4 – 3 to remove fluoride from their drinking water, thereby joining seventy-seven other Wisconsin communities that have discontinued fluoride in their drinking water. Milwaukee still adds fluoride to its water, while some nearby small villages, including Sussex, Hartland, and Mukwonago, have taken it out. Some communities see it as a cost saving measure, since the DNR (Department of Natural Resources) requires fluoride to be stored separately from chlorine, and workers need to wear protective safety gear. Others say people should be able to get enough fluoride from their toothpaste or where it naturally occurs in the water.

A major issue for many people, including one of the De Forest village officials, is the issue of personal choice. Village Trustee Taysheedra Allen said, "We should always honor the "no." If someone says they don't want something, they should not be forced to have it." (5) Patrick Remington, who began his career at the CDC (Centers for Disease Control) and is now emeritus professor at the UW-Madison School of Medicine and Public Health, has another viewpoint. He said that when some people oppose fluoride, they are not weighing the risks against the benefits. Remington went on to say that the benefits of fluoride are clear – less tooth decay and "science doesn't yet show neurodevelopmental problems for

children who ingest fluoride at the level in the U.S. water supply." He suggests that it would be wise for the U.S. to conduct a comprehensive risk - benefit analysis about fluoride in the drinking water done by a non-partisan body like the National Academy of Sciences. Local education could also be helpful, especially for parents of infants and young children. Remington concluded that people should remember what started the need for fluoride treatment. "Unless you really understand how disabling it is to have an entire generation of people without teeth, you're not acknowledging the harm that fluoridated water addressed…If your lived experience doesn't include these harms, you'll underestimate them." (5)

Fluoride In The Appleton, Wisconsin, Water Supply:

The City of Appleton website features a section on the Appleton Water Treatment Facility. The section proudly states that, "Appleton wins 2024 Best Tasting Water in Wisconsin!" This recognition came from the Wisconsin Section of American Water Works Association at their annual fall conference. The Appleton Water Treatment Facility is a self-financed enterprise owned by the City of Appleton, regulated by the Wisconsin Public Service Commission, the U.S. Environmental Protection Agency, and the Wisconsin Department of Natural Resources. It treats water from Lake Winnebago that is lime softened, filtered, uses ultraviolet as a disinfection process, adds chlorine for safe, high quality drinking water and adds fluoride for dental health. The City of Appleton's 2022 Water Quality Report noted that Appleton puts 4 ppm of fluoride in its water supply. (9)

The Wisconsin Department of Health Services recently reported that, although oral health has improved during the past 50 years, tooth decay is still the most common chronic childhood disease – five times more common than asthma. This is partially due to the intake of sugary snacks and low income families who may not have access to toothpaste and mouth rinses. In addition, "tooth decay affects more than 80% of Americans by the time they begin their adult years." The Department states, "Community water fluoridation is safe, effective, and supported by public health medical, and dental organizations worldwide." (7)

Conclusion:

Today fluoride is a controversial subject with no easy choice of what to do with it in our water supply. Is fluoride here to stay? Proponents cite the health benefits and cost savings from adding fluoride to our drinking water. Opponents want the practice stopped, citing problems with lowered IQ's in infants and young children; the possibility of it triggering cancer, including bone cancer in boys, and weakening of bones and tooth enamel. One extreme objection to putting fluoride in the water was put forth in the 1950's by Senator Joseph McCarthy who charged that fluoridation was a communist plot to poison America. (2) It's a lot to digest, and there are years of articles and reports to read about the benefits and disadvantages of fluoride. I have no simple answer to the question of whether or not we should discontinue putting fluoride in our drinking water. Hopefully, this paper will help inform you about this subject so you can make your own decision about continuing or discontinuing putting fluoride in our water supply.

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