Fluoride, Is It Worth The Price?

On January 25th, 1945, just a few months before the Great War ended in Europe, the modest All-American town of Grand Rapids, Michigan made history. It became the first city in the world to fluoridate its municipal water supply. Today, nearly 70% of American's have fluoridated water in their homes. Why?

It's a question that doesn't seem to get asked much anymore. Most people have heard of fluoride, because dentists use it and it's in nearly every oral hygiene product on the market. The general consensus seems to be that unless it contains fluoride, it's not an effective dental health product. We all "know" that fluoride helps prevent tooth decay, but how?

In general terms, fluoride ions, when present in saliva, exert a chemical influence on the hard exterior coating of the tooth called the enamel. Various factors like sugary foods, acidic liquids, etc. weaken the enamel and create opportunities for bacteria to penetrate and cause tooth decay and cavities. This benefit is only provided as long as the fluoride is in the saliva and is the reason why dentists recommend at least three brushings a day, and also, fluorinated water.

What is interesting to note, however, is that fluoridated water involves swallowing and digesting fluoride, whereas most oral hygiene products that contain fluoride recommend that you spit out the mouthwash, toothpaste, etc. and to limit the amount that you give to children. If fluoride is safe enough to give to everyone indiscriminately in a method where it will be digested, why spit out your toothpaste and why protect your children from it?

It's because fluoride is not an essential substance to life. It has no biological functions in the body, and in many cases is actually a poison. In fact, the fluoridation of drinking water is a very large controversy, not just in terms of its medical benefits and adverse health risks, but also from a social, moral, and ethical standpoint. The sole reason that fluoride is added to municipal water supplies is to prevent tooth decay in the general population, but is this the actual result?

What many in the US don't realize is that only a handful of industrialized nations fluoridate their water. In fact, most European countries don't. Some of them used to, namely Germany, Netherlands, and Sweden, but these countries stopped the practice after evidence was discovered that there were potential health risks and the perceived benefits of water fluoridation did not outweigh them. Those three countries all halted their fluoridation programs in the 1970s. They were joined in the 90s by Finland, Russia, Czech Republic, and Slovakia.

Purely coincidental, but amusing to note, is that it appears fluoridating water is something done mostly in English speaking countries. USA, England, Ireland, Canada, New Zealand, and Australia all fluoridate. The other major countries that fluoridate are Singapore (English is an official language), Hong Kong (a

former English territory), Brazil, and Israel. The practice of fluoridation is conducted in other countries to greater or lesser degrees in select locations, but the aforementioned are the major players.
Logic dictates that if something is going to be made mandatory for an entire population, it should be something that is both entirely safe, and critically necessary. If both of these conditions could be said about fluoridated water, then why is India currently installing reverse osmosis filters in many states in order to reduce the amount of fluoride in the water supply?

India is suffering from a fluoride problem. In at least 20 states, a condition called *fluorosis*, a medical condition that typically affects the teeth or the entire skeleton, and is caused by excessive fluoride consumption. Mild forms of dental fluorosis manifest as discoloration of the teeth, but in severe forms can cause black or brown stains on the teeth as well as cracking and pitting. Skeletal fluorosis is characterized by bone damage that causes pain in the bones and joints. In fact, it so closely resembles arthritis that it can very easily be misdiagnosed in the early stages. According to one of the major neurology centers in India, 60 million people are at risk of skeletal fluorosis in India, and 6 million people are currently disabled from it. There are 600,000 cases where the condition is so severe that the patients could potentially develop nervous system disorders.

Even though fluoride is added to the water in the United States there is currently no serious testing being done to determine how many people may be affected with skeletal fluorosis, and possibly misdiagnosed with arthritis.

Skeletal fluorosis, however, is the worst-case scenario for fluoride toxicity. That does not mean though that low dose toxicity of fluoride does not have negative effects throughout life. Even as early as birth.

Consider this: the logical behind the fluoridation of water is that if there is constant fluoride presence then there is constant tooth decay protection. The question remains: what is the proper amount of fluoride that is low enough to not cause fluorosis, but still enough to provide the oral health benefits?

So far there is no discernible consensus on the answer to that question. Even if you could find a solid answer, how would you guarantee that the proper dosage would reach everyone? The dose for an infant and the dose for an old man are the same? The dose for a pregnant 5-foot woman is the same as a 200lb male? Of course not. This is the fundamental failure with using municipal water supplies as a medication delivery system. Vastly different types of people who are consuming vastly different amounts of public water are receiving inconsistent dosages of a fundamentally non-essential medication without their informed consent.

The closest to an answer that the proponents of water fluoridation can provide is that generally between 0.5 – and 1ppm is safe and effective. The

previous sentence is highly debated, but it will serve to illustrate the next point.

Infants are perhaps the most at risk demographic to suffer negative consequences from water fluoridation. If 1ppm is considered safe for your average 160lb male who consumes perhaps 2000ml of public water a day, to be generous. Now consider a 6lb infant who is being fed bottled formula made with public water. The difference in body concentrations of fluoride is enormous and an infant HAS NO TEETH. A child whose teeth have not even broken the gums cannot receive the purported benefits of fluoride anyway, yet they are being exposed to a substance that carries significant health risks, particularly during critical developmental stages of their lives. It's no mystery why dental fluorosis affects mainly children rather than adults.

Are adults affected adversely by fluoride? Absolutely. In the late 1950s, a study (Galletti and Joyet) effectively used fluoride to treat people who had overactive thyroids, hyperthyroidism. What about the healthy population without and overactive thyroid? 2.3 to 4.5 mg per day is enough to substantially reduce thyroid function. In 1991, the Department of Health and Human Services estimated the total fluoride exposure in areas where the public water is fluoridated is between 1.6 – 6.6 mg per day. The second most prescribed medication in 2010 was Synthroid, a hormone replacement drug for underactive thyroid. 2 + 2 = 4.

But maybe all of these risks are worth it? If fluoridating the water does effectively prevent tooth decay, shouldn't that offset the costs? There are many who argue that fluoride effectively has a zero net effect on tooth decay. In fact, there are studies that claim socioeconomic status has a greater impact on dental health than nearly any other factor.

If we were to look at the primary causes of tooth decay, lack of fluoride is not among them. They are frequency of sugar consumption, low pH or acidic oral environment (eating lemon juice, etc.), and poor oral hygiene (flossing). Low-income families and individuals are the ones most likely to have a diet heavy in refined carbohydrates, acidic beverages, and may not practice adequate oral hygiene. No amount of fluoride is going to immunize these people from tooth decay. It may slow the process or marginally delay it, but the degree to which it can accomplish this through municipal water sources is highly doubtful.

Besides the health implications, the practice of water fluoridation is unethical and goes against sound medical principles. Water fluoridation is essentially the mass medicating of a population. It is not for the purpose of sterilizing the water. Its only purported purpose is to indiscriminately medicate an entire population. It does not allow people to have a choice, be informed of their condition, and have a licensed person who understands their unique medical condition prescribe exactly the proper treatment that fits their unique needs.

What is even more outrageous is that the type of fluoride that is used in studies to promote the health benefits of fluoride is sodium fluoride, typically pharmaceutical grade. The type of fluoride in the water is actually something else entirely. The majority of municipal fluoridating facilities use sodium fluorosilicate and fluorosilicic acid. The National Institute for Occupational Safety and Health classifies these as hazardous substances. In fact, most of the fluorosilicic acid is acquired from phosphate fertilizer plants and then distributed to fluoridation facilities. There is no consumption safety testing for this type of fluoride and certainly no studies to demonstrate this substance provides the same tooth decay preventative properties as medical grade sodium fluoride. In fact, this type of fluoride possesses a serious risk of harmful contaminants like arsenic, aluminum, and other toxic heavy metals.

It should also be said that municipal water supplies are not the only source of fluoride. There exist a number of fluoride-based pesticides that leave residues on food. There are also medications for various conditions that utilize a fluoride compound, and obviously, the majority of oral hygiene products contain fluoride. This further compounds the problem of over-fluoridating people. Besides naturally occurring fluoride that occurs even in some well-water communities, the multiplied exposure to fluorides from man-made sources only increases the likelihood of adverse medical events.

So what is the solution? Avoidance, avoidance, avoidance. If you live in a fluoridated community, do not drink the water, unless you use a high quality reverse osmosis filter that is properly maintained. Do not use the water for making soup, or tea, or coffee, or for any other purpose other than cleaning and necessary hygiene purposes like bathing. Avoid fluoride containing dental hygiene products, this may seem difficult, but with the power of the internet and the rapidly growing organic and health conscious industry, fluoride-free alternatives are becoming more and more abundant.

If you are concerned about tooth decay, the most important steps you can take are to eat a diet that does not damage your teeth and to maintain excellent oral hygiene, namely brushing and flossing regularly.

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