



## Confronting the Myths of Water Fluoridation Promoters

*The following is an excerpt adapted from the recently-released book, The Case Against Fluoride by Paul Connett, PhD; James Beck, PhD; and H. S. Micklem, DPhil (Chelsea Green Publishing, 2010).*

Proponents of fluoridation have made a number of claims that have been effective with an ill-informed public. However, when those claims are examined carefully, they are found to have little merit. Although opponents have pointed out the weaknesses and fallacies in some of these “chestnuts” over the many years of this debate, they continue to crop up. Let’s take a look at them.

### ***Claim 1: Fluoride is “natural.” We are just topping up what is there anyway.***

Natural does not necessarily mean good. Arsenic, like fluoride, leaches naturally from rocks into groundwater, but no one suggests topping that up. Besides, there is nothing “natural” about the fluoridating chemicals, as they are obtained largely from the wet scrubbers of the phosphate fertilizer industry. The chemicals used in most fluoridation programs are either hexafluorosilicic acid or its sodium salt, and those silicon fluorides do not occur in nature. What is more, under international law they cannot be dumped into the sea, yet a dilution of about 180,000 to 1 is supposed to protect against all harm when the same chemicals are added to the domestic water supply. Yet the language used in a recent Q&A pamphlet from the Victoria (Australia) Department of Human Services is an effort to persuade citizens that the chemicals used in fluoridation are not hazardous waste products of the fertilizer industry.

### ***Claim 2: Fluoridation is no different than adding iron, folic acid, or vitamin D to bread and other foodstuffs.***

There is a world of difference:

1. Iron, folic acid, and vitamin D are known essential nutrients. Fluoride is not.
2. All of those substances have large margins of safety between their toxic levels and their beneficial levels. Fluoride does not.
3. People who do not want those supplements can seek out foods without them. It is much more difficult to avoid tap water.

### ***Claim 3: The amount of fluoride added to the public water system, 1 ppm, is so small it couldn’t possibly hurt you.***

Promoters use analogies such as 1 ppm is equivalent to one cent in \$10,000 or one inch in sixteen miles to make it appear that we are dealing with insignificant quantities of fluoride. Such analogies are nonsensical without reference to the toxicity of the chemical in question. For example, 1 ppm is

about a million times higher than the safe concentration to swallow of dioxin, and 100 times higher than the safe drinking water standard for arsenic; it is also up to 250 times higher than the level of fluoride in mother's milk.

***Claim 4: You would have to drink a whole bathtub of water to get a toxic dose of fluoride.***

Here again, proponents are confusing a toxic dose with a lethal dose—that is, a dose causing *illness or harmful effect* as opposed to a dose causing *death*. Opponents of fluoridation are not suggesting that people are going to be killed outright from drinking fluoridated water, but we are suggesting that it may cause immediate health problems in those who are very sensitive and, with long-term exposure, persistent health problems in others.

***Claim 5: Fluoridated water is only delivered to the tap. No one is forced to drink it.***

Unfortunately, that is not a simple option, especially for families of low income who cannot afford bottled water or expensive fluoride filtration systems. Even those who can afford alternatives cannot easily protect themselves from the water they get outside the home. Fluoridated tap water is used in many processed foods and beverages (soda, beer, coffee, etc.).

***Claim 6: Fluoridation is needed to protect children in low-income families.***

This is a powerful and emotional argument. However, it ignores the fact that poor nutrition is most prevalent in families of low income, and the people most vulnerable to fluoride's toxic effects are those with a poor diet. Thus, while children from low-income families are a special target for this program, they are precisely the ones most likely to be harmed. Moreover, some of the many distressing newspaper accounts of children suffering from tooth decay are found in low-income areas located in cities that have been fluoridated for over thirty years. In fact numerous state oral health reports indicate the continued disparity in tooth decay between low-income and high-income families, even in states with a high percentage of the population drinking fluoridated water.

***Claim 7: Fluoridation has been going on for over sixty years; if it caused any harm, we would know about it by now.***

Such statements would start to be meaningful only if fluoridated countries had conducted comprehensive health studies of their fluoridated populations. Most have not. Only a few health studies have been performed in the United States, most many years ago; very few health studies have been performed in Australia, Canada, New Zealand, or the UK; and none has been performed in Colombia, Ireland, Israel, or Singapore (all countries with more than 50 percent of the population drinking fluoridated water).

***Claim 8: According to the Centers for Disease Control and Prevention, fluoridation is one of the top ten public health achievements of the twentieth century.***

Most journalists, newspaper editors, and officials who quote this claim have little or no idea how poorly it is supported by the report that supposedly justifies the statement.

***Claim 9: For every dollar spent on fluoridation, \$38 is saved in dental costs.***

This statement is taken from another report written by members of the Oral Health Division of the CDC. Two of its three authors, Susan Griffin and Scott Tomar, also wrote the report mentioned in Claim 11 above.

Griffin et al. inflated the benefits of fluoridation and ignored the costs of any side effects, including the one effect no one can deny, dental fluorosis. Cosmetic veneer treatment for fluorosis costs upward of \$1,000 per tooth. The CDC authors also allowed a loss of earnings of \$18 an hour for time off work to get a dental filling. Not all people lose pay when they get dental treatment, and certainly children don't.

***Claim 10: The majority of the U.S. population drinks fluoridated water.***

This statement is misused to put pressure on communities that do not fluoridate their water. They are led to believe that they are the odd ones out, behind the times, blocking progress. They are not. Only about 400 million people worldwide drink fluoridated water, and most of them live in North America. Globally, those who do are a distinct minority. Only eight countries have more than 50 percent of their population drinking fluoridated water; only 2 percent of the population of Europe drinks fluoridated water.

***Claim 11: Every major dental and medical authority supports fluoridation.***

Here we return to the dubious nature of endorsements not backed up by independent and current reviews of the literature. Many of the major associations on the list frequently cited by the American Dental Association endorsed fluoridation before a single trial had been completed and before the first health study had been published, in 1954.

***Claim 12: When fluoridation is stopped, tooth decay rates go up.***

There now have been at least four modern studies showing that when fluoridation was halted in communities in East Germany, Finland, Cuba, and British Columbia (Canada), tooth decay rates did not go up.

***Claim 13: Hundreds (or thousands) of studies demonstrate that fluoridation is effective.***

On the contrary, the UK's York Review was able to identify very few studies of even moderate quality, and the results were mixed.

***Claim 14: Fluoridation reduces tooth decay by 20–60 percent.***

The evidence found for fluoridation's benefits is very weak. Even a 20 percent reduction in tooth decay is a figure rarely found in more recent studies. Moreover, we have to remember that percentages can give a very misleading picture. For example, if an average of two decayed tooth surfaces are found in a non-fluoridated group and one decayed surface in a fluoridated group, that would amount to an impressive 50 percent reduction. But when we consider the total of 128 surfaces on a complete set of teeth, the picture—which amounts to an absolute saving in tooth decay of a mere 0.8 percent—does not look so impressive.

***Claim 15: Hundreds (or thousands) of studies demonstrate that fluoridation is safe.***

When proponents are asked to produce just one study (a primary study, not a governmental review) that has convinced them that fluoridation is safe, they are seldom able to do so. Apparently, they have taken such assurances from others at face value, without reading the literature for themselves. The fact is, it is almost impossible to prove conclusively that a substance has no ill effects. A careful and properly controlled study may show that, under the conditions and limitations of the investigation, no harm is apparent. A hundred such studies may permit a considerable degree of confidence—but in the case of fluoridation, very few studies have even been attempted. As fluoride accumulates

progressively in the skeleton and probably the pineal gland, studies need to extend over a lifetime. Meanwhile, fluoride at moderate to high doses can cause serious health problems, leaving little or no margin of safety for people drinking fluoridated water.

***Claim 16: Opponents of fluoridation do not have professional qualifications.***

Some opponents of fluoridation do not have professional qualifications (of course); many do. Many highly qualified doctors, dentists, and scientists have opposed fluoridation in the past and do so today. Currently, over 3,000 individuals from medicine, dentistry, science, and other relevant professions are calling for an end to fluoridation worldwide. Furthermore, many opponents without professional qualifications have educated themselves on the science relevant to fluoridation and are qualified to evaluate many aspects of it.

***Claim 17: Opponents of fluoridation get their information from the Internet.***

No one denies that plenty of rubbish appears on the Internet. But just because a published study can be found using the Internet does not invalidate it. In fact, scientists now do much of their reading of the scientific literature online. The Fluoride Action Network maintains a Health Effects Database on its Web site, which provides citations, excerpts, abstracts, and in some cases complete pdf files of many published studies. Proponents would do well to read some of these papers, rather than trying to dismiss them because they are available online.

***Claim 18: There is no evidence that fluoride at the levels used in fluoridation schemes causes any health problems.***

There are three weaknesses to this argument. First, it does not make clear that fluoridating countries have done few basic health studies of populations drinking fluoridated water. Absence of studies does not mean absence of harm. Second, just because a study is conducted at a higher water fluoride level than 1 ppm does not mean that it is not relevant to water fluoridation. Toxicologists are nearly always extrapolating from high-dose animal experiments to estimate safe doses for humans. In the case of fluoride, we have the luxury of a large number of human studies conducted in countries with moderate to high levels of exposure to naturally occurring fluoride. What is required here is a “margin-of-safety” analysis to see if there is a sufficient safety margin between the doses that cause harm and the doses likely to be experienced in fluoridated communities. In our view, there is not. And third, it is not true that there is no evidence of ill effects from fluoride at present levels of fluoridation.

***Claim 19: There is no evidence that any individuals are particularly sensitive to fluoride’s toxic effects.***

It would be far more accurate to state that governments practicing fluoridation have shown no interest in testing scientifically the many anecdotal reports from citizens (along with case studies published by a number of authors) that they are sensitive to fluoride. Patients complain of a number of symptoms that disappear when the source of fluoride is removed and return when the source is reintroduced.

***Claim 20: Dental fluorosis is only a “cosmetic” problem.***

Dental fluorosis is the one condition caused by fluoride that proponents do not deny. However, they commonly claim that the condition is not a health effect but merely a cosmetic effect. Fluoridation opponents, on the other hand, maintain that dental fluorosis—the result of fluoride’s interference with the growing tooth cells—is the first visible evidence that fluoride has had an adverse systemic effect on the body, and they wonder what other developing tissues may have been affected while the tooth

cells were being damaged. Of particular concern are the skeletal system, the brain, and the endocrine system, where damage could be happening without visible telltale signs. Proponents offer no evidence that other tissues have not been affected while dental fluorosis is occurring.

Nor are cosmetic effects necessarily trivial. Moderate dental fluorosis, which involves discoloration of 100 percent of a tooth surface and affects over 1 percent of children living in fluoridated communities, is likely to cause psychological damage to teenagers and is very expensive to treat.

Of some pertinence are the CDC's stated objectives of the fluoridation program: "Adjusted fluoridation is the conscious maintenance of the optimal fluoride concentration in the water supply for reducing dental caries and minimizing the risk of dental fluorosis" [emphasis added]. Regardless of whether the CDC's first objective has been met, with 32 percent of American children now affected by dental fluorosis, the second objective has clearly not been.

***Claim 21: Skeletal fluorosis is very rare in fluoridated countries.***

It is difficult for promoters of fluoridation to deny that high natural levels of fluoride have caused severe bone damage in millions of people in India, China, and several other countries. However, proponents insist that skeletal fluorosis is a rare occurrence in countries with artificial fluoridation like the United States. What they really mean by this is that the crippling phase (stage III) of this condition is rare in the United States; they fail to recognize that the earlier phases (stage I and stage II) are associated with pains in the joints and bones, symptoms identical to the early symptoms of arthritis, a condition that affects many millions of adults in the United States. The 2006 NRC review recommends that stage II skeletal fluorosis be considered an adverse effect: "The committee judges that stage II is also an adverse health effect, as it is associated with chronic joint pain, arthritic symptoms, slight calcification of ligaments, and osteosclerosis of cancellous bones." No fluoridating country has undertaken a study to see if there is a relationship between fluoridation and arthritis.

***Claim 22: Opponents use "scare tactics."***

In reality, the potential that fluoride might be causing a number of harms (including osteosarcoma in young men; arthritis and hip fractures in the elderly; lowered IQ in children; and lowered thyroid function) in some of the 400 million people who are drinking fluoridated water daily is indeed worrying (see chapters 10–19). The risks for one individual may be small, but if millions of people drink fluoridated water, a small risk multiplies up to a lot of cases. If we suppose a risk of some harm to 1 in 1,000, that would mean 400,000 cases worldwide or 10,000 in a large city.

**Summary**

**Proponents of fluoridation possess a wide repertoire of incorrect statements about the science and unfounded generalizations about those who disagree with them. We have reproduced and refuted some of the commoner ones in this chapter.**

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