



**Response to Presentation of Ron Greinke at Antifluoridation Meeting in Meadville,  
On April 8, 2017**

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The following is a point-by-point explanation of the fallacies of the arguments put forth by Ron Greinke, close affiliate of the New York antifluoridationist faction, "FAN" in a meeting sponsored by antifluoridationists in Meadville on April 8, 2017. These responses are based entirely on a written report of what was stated by Greinke, by an attendee of that meeting.

Following the responses is a page of references, followed by pages of effectiveness studies, followed by a compendium of organizations which recognize the public health benefit of water fluoridation.

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*1. Greinke: " 70% of dentist do not acknowledge that tooth decay comes from high sugar diets"*

Facts:

Dental decay is caused by acid secreted by oral bacteria adhering to teeth. Sugar feeds this bacteria, thereby allowing it to thrive. No dentist of whom I'm aware does not acknowledge this elementary fact. This is a basic tenet taught to first year dental students, and which is a staple of education provided in most, if not all, dental practices.

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*2. Greinke: "The benefits of Fluoride are overexaggerated, and the risks are downplayed"*

Facts:

A. The peer-reviewed science of fluoridation does not "overexaggerate". Countless peer-reviewed scientific studies clearly demonstrate the effectiveness of fluoridation in the prevention of dental decay in entire populations. A list of a few such studies is included at the end of this document.

B. There are no "risks" of optimally fluoridated water to "downplay". In the entire 72 year history of this initiative, there have been no proven adverse effects. Any purported "risks" are based on unsubstantiated claims, invalid or irrelevant science, and misrepresentations of scientific studies by antifluoridationists.

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3. Greinke: *"By putting Fluoride in Meadville's water, citizens are being forced to take a drug without their approval"*

Facts:

A. No one is forced to do anything in regard to water fluoridation. If Mr. Greinke suddenly had his tap water contaminated with a large load of horse manure, would he simply drink it anyway because he was somehow "forced" to do so? Of course not. He would find alternatives, as there would be nothing "forcing" him to drink that water.

B. Fluoride has always existed in water. Humans have ingested it in that water since the beginning of time. To suddenly proclaim this substance to be a "drug" is ludicrous.....which is why no court of last resort has ever ruled in favor of the "forced medication" argument constantly attempted by antifluoridationists.

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4. Greinke: *"Eating right and removing the toxins from diets would lead to a healthier lifestyle than Fluoride"*

Facts:

Water fluoridation is not an "either/or" proposition. While fluoridation is the most cost-effective means of preventing dental infection, implementing it does not preclude the practice of any other healthy lifestyle measures.

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5. Greinke: *"Meadville's Fluoride Source: Phosphate rock + H<sub>2</sub>SO<sub>4</sub> → Phosphate Fertilizer + HF + SiF<sub>4</sub>  
HF ↑ + SiF<sub>4</sub> ↑ → H<sub>2</sub>SiF<sub>6</sub> (Hexafluorosilic Acid)"*

Facts:

The substance most widely utilized to fluoridate water systems is hydrofluorosilic acid (HFA). HFA is a co-product of the process which extracts the other co-product, phosphoric acid, from

naturally occurring phosphorite rock. Phosphoric acid is used in soft drinks we consume and in fertilizers which become incorporated into foods that we eat. The HFA co-product is diluted to a 23% aqueous solution which is utilized to fluoridate water systems. To irrationally fear one co-product of this process is to irrationally fear the other.

Once introduced into drinking water, due to the pH of that water (~7), the HFA is immediately and completely hydrolyzed (dissociated). The products of this hydrolysis are fluoride ions identical to those which have always existed in water, and trace contaminants in barely detectable amounts that are so far below US EPA mandated maximum allowable levels of safety that it is not even a certainty that those detected aren't that already exist in water naturally. After this point, HFA no longer exists in that water. It does not reach the tap. It is not ingested. (2)

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6. Greinke: *"Factory Observation: Nearby cattle had dental and skeletal fluorosis Because of the fluorosis in the cattle, factories were forced to "Scrub" their product  $H_2SiF_6$  (Scrubber)  $\rightarrow H_2SiF_6$  (aq)  $H_2SiF_6 + NaOH \rightarrow Na_2SiF_6 + H_2O$ "*

Facts:

A "scrubber" is an apparatus which precipitates valuable substances out of gases as they pass through the apparatus. It does not involve chimneys, ladders, or scrub brushes, as antifluoridationists dishonestly attempt to portray.



Scrubbing Apparatus

7. Greinke: *"H<sub>2</sub>SiF<sub>6</sub>: Made by the fertilizer industry (toxic waste), sold to Meadville's water utilities, and it is now a "Health Product"*

Facts:

There is no "toxic waste" involved in water fluoridation. Hydrofluorosilic acid is produced for specific purposes, water fluoridation being one. HFA utilized in fluoridation is remarkably pure, with any contaminants at all being detected only when 10 times the single use amount of HFA is tested. In that 10 X amount, any detected contaminants are present in amounts so far below US EPA mandated maximum allowable levels of safety that it is not even a certainty that those detected are not those that already exist in water naturally. (1)

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8. Greinke: *"Fluoride is shipped to Meadville and diluted down below harmful levels"*

Facts:

Fluoride is not "shipped to Meadville". Fluoride is the anion of the element fluorine. An anion is a negatively charged atom. The substance "shipped to Meadville" is the compound HFA. Once introduced into drinking water, HFA releases its fluoride ions into that water, and is gone. The fluoride ions released into water are identical to those which already exist in water. (2)

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9. Greinke: *"Symptoms of skeletal fluorosis are similar to arthritis"*

Facts:

There is no valid, peer-reviewed scientific evidence of any association of optimally fluoridated water with arthritis. Skeletal fluorosis is so rare in the United States as to be nearly non-existent. Attempts by antifuoridationists to claim arthritis to actually be skeletal fluorosis are groundless speculation, with no substantiation, whatsoever.

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10. Greinke: *"May cause harm to brain of fetus (Noted that no viable research has been completed yet)"*

Facts:

There is no valid, peer-reviewed scientific evidence of any "harm to brain of fetus" from optimally fluoridated water. There is no "viable research" indicating otherwise.

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11. Greinke: *"Hexafluorosilic Acid is a chemical that can dissolve cement and glass"*

Facts:

The properties of hexafluorosilic acid are of no concern. Once added to drinking water HFA immediately and completely hydrolyzes into fluoride ions, identical to those which already exist in water, and barely detectable trace contaminants. After that point, HFA no longer exists in that water. It does not reach the tap. It is not ingested. (2)

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12. Greinke: *"Fluoride is neither a nutrient nor a supplement"*

Facts:

A. Whether fluoride is a nutrient or not, is debatable. It is also irrelevant. Fluoridation has never been promoted, or expected, to be a remedy for any nutrient deficiency.

B. Fluoride is indeed a supplement. It is widely prescribed as a supplement in areas where water is not fluoridated, or to those whose well water contains fluoride at less than the optimal concentration.

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13. Greinke: *"A deficiency of fluoride will not cause any disease"*

Facts:

Preventive measures are not implemented because a lack of them will cause disease. They are implemented because prevention is always the best "cure" for disease. It has been widely observed and demonstrated by peer-reviewed science, that populations consuming water with a fluoride content at a certain level will exhibit greater resistance to dental decay, with no adverse effects. Because a lack of fluoride does not cause disease is an absurd argument against such disease prevention.

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14. Greinke: *"No recommended minimum daily dosage"*

Facts:

Water fluoridation is not about "dosage" of fluoride. It is about a certain concentration of fluoride in water which has been shown to increase resistance to dental decay in populations consuming that water, with no adverse effects.

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15. Greinke: *"Fluoride containing compounds are drugs. Used to treat hyperthyroidism and increase bone density"*

Facts:

Water-containing compounds are drugs. These compounds are used to treat countless serious medical conditions. Does this mean that water is a drug? Fluoride has always existed in water. Humans have been ingesting it in that water since the beginning of time. To suddenly attempt to proclaim this fluoride to be "drugs" is ludicrous.....a conclusion with which the courts have agreed. No court of last resort has ever upheld the "forced medication" argument of anti-fluoridationists.

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16. Greinke: *"People with 'Kidney Sickness' cannot filter out fluoride."*

There is no valid, peer-reviewed scientific evidence of any adverse effect on "people with kidney sickness" from optimally fluoridated water. There is, however, such evidence which clearly demonstrates the opposite.

Ludlow, et al. found:

"Because the kidneys are constantly exposed to various fluoride concentrations, any health effects caused by fluoride would likely manifest themselves in kidney cells. However, several large community-based studies of people with long-term exposure to drinking water with fluoride concentrations up to 8 ppm have failed to show an increase in kidney disease."

"People exposed to optimally fluoridated water will consume 1.5mg of fluoride per day. Available studies found no difference in kidney function between people drinking optimally fluoridated and non-fluoridated water. There is discrepant information in studies relating to the potential negative effects of consuming water with greater than 2.0ppm of fluoride."

"Available literature indicated that impaired kidney function results in changes in fluoride retention and distribution in the body. People with kidney impairment showed a decreased urine fluoride and increased serum and bone fluoride correlated with degree of impairment; however, there was no consistent evidence that the retention of fluoride in people with stage four or stage five CKD, consuming optimally fluoridated water, resulted in negative health consequences." (3)

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*17. Greinke: "A prescription is needed to obtain Fluoride"*

Facts:

A prescription is not needed to obtain fluoride. Fluoridated bottled water and fluoridated dental products require no prescription. Fluoride supplements require prescription in order to insure as well as possible that the existing fluoride content of the patient's primary water source is verified prior to dispensing the supplements. The same safeguard exists with water fluoridation. Prior to fluoridating a water system, the existing fluoride level of that water is verified. Once this is determined, only that amount of fluoride is added which will raise the total level of fluoride to the optimal concentration.

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*18. Greinke: "Fluoride is not available over-the-counter"*

Facts:

Fluoridated bottled water and fluoridated dental products are indeed available over-the-counter at countless retail stores everywhere.

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*19. Greinke: FDA says Fluoride is a new, unapproved drug*

Facts:

A. The FDA does not say that "Fluoride is a new, unapproved drug". The FDA grandfathered in many substances, such as aspirin and fluoride supplements, which had a long track record of use with clearly demonstrated benefits and no issues with safety. The FDA deemed it unnecessary to subject such common substances to expensive and protracted testing only to determine what is already known...they are safe and effective. If the FDA did not approve fluoride, there would be countless miles of empty shelves in retail stores where dental products now reside.

B. The FDA has no jurisdiction over the contents of drinking water supplies. That jurisdiction falls entirely under the EPA. It is therefore completely irrelevant to water fluoridation, what the FDA does or does not approve.

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20. Greinke: *"Fluoride is a potent drug."*

Facts:

Fluoride is a negatively charged atom of the element fluorine. Humans have ingested it in their water since the beginning of time. To suddenly proclaim this fluoride in water to be "a potent drug" is ludicrous.

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21. Greinke: *"Fluoride is potent enzyme poison"*

Facts:

There is no valid, peer-reviewed scientific evidence that fluoride at the optimal level at which water is fluoridated is an "enzyme poison".

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22. Greinke: *"62 bodily enzymes are inhibited by fluoride"*

Facts:

There is no valid, peer-reviewed scientific evidence that any "bodily enzymes are inhibited" by fluoride at the optimal level at which water is fluoridated.

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23. Greinke: *"A nanogram can inhibit activity of enzymes"*

Facts:

There is no valid, peer-reviewed scientific evidence of any enzyme activity inhibited by fluoride at the optimal level at which water is fluoridated.

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24. Greinke: *"Fluoride builds up in the body, regardless of the intake per day"*

Facts:

Fluoride bioaccumulation is solely reliant on fluoride intake. Accumulation of fluoride within the body is not a linear constant. It decreases in accord with its equilibrium with blood plasma fluoride levels. When fluoride is ingested, approximately half of it is excreted in short order via the kidneys. The other half is stored in the hard tissues of the body, i.e. teeth and bones. As blood plasma levels decrease, fluoride is released from the bones back into the blood stream where it is excreted via the kidneys. This process continues until equilibrium is once again met between plasma and hard tissues. Plasma fluoride levels are dependent on fluoride intake and that released from hard tissues. (4)

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25. Greinke: *"Need a margin of safety; some bodies store a lot more fluoride than others"*

Facts:

In the entire 72 year history of fluoridation, hundreds of millions having chronically ingested optimally fluoridated water during that time, there have been no proven adverse effects....in spite of constant, ongoing efforts by antifuoridationists to find anything at all they could claim to be an adverse effect of this initiative. None.

There could be no clearer demonstration of the adequacy of the "margin of safety" of fluoride at the optimal level than this.

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26. Greinke: *"Fluoride interferes with the breakdown of glucose, can cause diabetes"*

Facts:

There is no valid, peer-reviewed scientific evidence of any association of optimally fluoridated water and diabetes. While antifuoridationists attempt to use a flawed recent study by Fluegge to claim such an association, in actually, even if one were to accord credence to this study, it clearly demonstrates that areas fluoridated with HFA have less incidence and prevalence of diabetes. (5)

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27. Greinke: *"One glass of Meadville's water will contain 0.7 ppm fluoride. Fluoridated water will contain 200,000 nanograms of fluoride ions"*

Facts:

Greinke seems not to understand the difference between dose and concentration.

Yes, one glass of optimally fluoridated water will contain 0.7 ppm fluoride. So will 10,000 gallons of optimally fluoridated water. So will any amount of optimally fluoridated water. Parts per million is a concentration, not a dose. It therefore makes no difference what is the quantity of optimally fluoridated water, it will always contain 0.7 ppm fluoride.

Nanograms of fluoride, on the other hand, is a dose. Unlike concentration, dose is dependent on amount. Therefore in order to determine how many "nanograms of fluoride ions" are contained in fluoridated water, one must know the precise amount of that fluoridated water. Without knowing the amount, it is ludicrous to claim that "fluoridated water will contain 200,000 fluoride ions."

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28. Greinke: *"It is unethical to use public water to supply and deliver any drug"*

Facts:

There are no drugs involved in optimally fluoridated water. The courts have been clear on this point.

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29. Greinke: *"Cannot control who gets it"*

Facts:

Neither can one control who gets chlorine, ammonia, or any of the myriad other routine additives to water supplies. However, when the maximum amount of a substance which can be ingested falls below the threshold of adverse effects, there is no need to "control who gets it". Before enough fluoride could be ingested from optimally fluoridated water, in addition to all other normal sources of fluoride intake, to reach the threshold of adverse effects, water toxicity would be the concern, not fluoride.

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30. Greinke: *"Cannot control the dosage"*

Facts:

The dosage of fluoride from optimally water is very strictly controlled. It is nonfluoridated systems which are not controlled.

Simply put, water is fluoridated at 0.7 mg/liter (ppm=mg/liter). Thus, for every liter of fluoridated water consumed, the "dose" of fluoride intake is 0.7 mg. The average daily water consumption by an adult is 2-3 liters per day. The US CDC estimates that of the total daily intake, or "dose", of fluoride from all sources including dental products, 75% is from the water.

The US Institute of Medicine has established that the daily upper limit for fluoride intake from all sources, for adults, before adverse effects will occur, short or long term, is 10 mg. As can be noted from a simple math equation, before the daily upper limit of fluoride intake could be attained in association with optimally fluoridated water, water toxicity would be the concern, not fluoride.

The range of safety between the minuscule few parts per million fluoride that are added to existing fluoride levels in your water, is so wide that "dose" is not an issue.

While fluoridated systems are strictly maintained at the optimal level, non-fluoridated systems are bound only by the EPA maximum allowable level of 4.0 mg/liter. (6)

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31. Greinke: *"Mild dental fluorosis impacts up to 50% of the tooth surface"*

Facts:

Mild dental fluorosis is a barely detectable effect which causes no adverse effect on cosmetics, form, function, or health of teeth. As peer-reviewed science has demonstrated mildly fluorosed teeth to be more decay resistant, many consider this effect to not even be undesirable, much less adverse. (7)

From the American Dental Association:

"Enamel fluorosis is not a disease but rather affects the way that teeth look. In the vast majority of cases, enamel fluorosis appears as barely noticeable faint white lines or streaks on tooth enamel and does not affect the function or health of the teeth. In fact, in many cases, the effect is so subtle that, usually only a dental expert would notice it during an examination. Enamel

fluorosis occurs only when baby and permanent teeth are forming under the gums. Once teeth break through the gums, they cannot develop enamel fluorosis."

"Four typical cases of mild fluorosis, seen in children participating in the Iowa Fluoride Study."



<http://www.ada.org/en/member-center/oral-health-topics/fluorosis>

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32. *Greinke: "Moderate to severe dental fluorosis impacts 100% of the tooth surface"*

Facts:

Moderate to severe dental fluorosis does not occur attributable to optimally fluoridated water. As the 2006 NRC Committee on Fluoride in Drinking Water clearly stated, severe dental fluorosis does not occur in communities with a water fluoride content of 2.0 ppm or less. (8)

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33. *Greinke: "Expensive treatment"*

Facts:

Mild dental fluorosis requires no treatment. There is thus, no dental expense involved in dental fluorosis which may be attributable to optimally fluoridated water.

Untreated dental decay which can be, and is, prevented by water fluoridation, on the other hand, causes lifetimes of extreme pain, debilitation, black discoloration and loss of teeth, development of serious medical conditions, and life-threatening infection. These devastating effects are astronomically expensive, both monetarily, and in loss of health and quality of life. While antifuoridationists such as Greinke who have no experience in dealing with the effects of untreated dental decay, attempt to pump barely detectable faint white streaks of mild dental fluorosis into being a major disorder of some sort, they callously ignore the real problem...untreated dental infection occurring in close proximity to the brain, with a direct pathway to the rest of the body through a common bloodstream.

In 2007, a 12 year old child tragically died as a direct result of one untreated cavity in one tooth. The tragedy of this aside, the costs incurred in unsuccessful attempts to save his life were in excess of \$250,000. In all likelihood, a large part, if not all, of this expense was born by taxpayer-borne public assistance programs.

And this was just for one individual.

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34. Greinke: *"Dentists like fluoride treatment because they make money on cosmetic work"*

Facts:

Dentists like fluoride treatment because it significantly reduces dental decay which, in turn, improves health.....the goal of healthcare providers. As no treatment is required for mild dental fluorosis, there is no money to be made by dentists on "cosmetic work".

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35. Greinke: *"No statistical difference in tooth decay in the fluoridated and non-fluoridated communities"*

Facts:

This frequently made claim by antifuoridationists is based on a graph created by personnel of the New York antifuoridationist faction, "FAN" which misrepresents data of the World Health Organization. It is often made with the misleading statement "WHO data shows.....", implying the skewed data to be a finding of the WHO, which it is not. An excellent explanation as to how this graph misrepresents WHO data is provided by New Zealand chemist, Ken Perrott, PhD:

<https://openparachute.wordpress.com/2015/08/12/fluoridation-connetts-naive-used-of-who-data-debunked/>

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36. Greinke: *"The Cochrane Collaboration – Review of Water Fluoridation in 2015"*

Facts:

The 2015 Cochrane Review was an update of the York 2000 literature review. As such, Cochrane utilized narrow parameters in accordance with the original York parameters, as to what studies it chose to review. Out of 4,600 fluoride studies considered, Cochrane chose to review but 155. This omitted thousands of quality, peer-reviewed fluoride studies which Cochrane chose not to review. The findings of Cochrane are applicable to those 155 studies.

37. Greinke: *"Determined Fluoride does not significantly reduce cavities in permanent teeth"*

Facts:

This is false. The following is what Cochrane reported:

*"The available data come predominantly from studies conducted prior to 1975, and indicate that water fluoridation is effective at reducing caries levels in both deciduous and permanent dentition in children. Our confidence in the size of the effect estimates is limited by the observational nature of the study designs, the high risk of bias within the studies and, importantly, the applicability of the evidence to current lifestyles. The decision to implement a water fluoridation programme relies upon an understanding of the population's oral health behaviour (e.g. use of fluoride toothpaste), the availability and uptake of other caries prevention strategies, their diet and consumption of tap water and the movement/migration of the population. There is insufficient evidence to determine whether water fluoridation results in a change in disparities in caries levels across SES. We did not identify any evidence, meeting the review's inclusion criteria, to determine the effectiveness of water fluoridation for preventing caries in adults." (9)*

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38. Greinke: *"High risk of bias within studies"*

Facts:

In making claims about the Cochrane Review, antifluoridationists misrepresent the scientific "bias" noted by Cochrane, as being the "bias" as defined in the conventional manner:

*"Bias, prejudice mean a strong inclination of the mind or a preconceived opinion about something or someone. A bias may be favorable or unfavorable: bias in favor of or against an idea." (10)*

However, "bias" in the scientific sense, as defined by the Cochrane Review is as follows:

*"the quality of the methods used and how thoroughly the results were reported" (9)*

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39. Greinke: "No evidence Fluoride benefitting adults"

Facts:

Cochrane stated the following in regard to the 155 studies it chose to review:

*"We did not identify any evidence, meeting the review's inclusion criteria, to determine the effectiveness of water fluoridation for preventing caries in adults." (9)*

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40. The ADA has three sources (He did not list them). "Facts are stated incorrectly"

Facts:

The ADA, as does any credible, highly respected healthcare organization, goes to great lengths to verify the validity of its information prior to publicly disseminating it. Additionally, it fully references all claims that warrant supporting evidence. I am personally unaware of any facts of fluoridation which the ADA has "stated incorrectly".

Conversely, as has been amply demonstrated in this document, antifuoridationists notoriously fail to verify the validity of their claims. As Greinke has done here, they constantly disseminate unsubstantiated claims, false statements, misrepresented science, and misinformation.

Decision-makers and the general public must decide if they prefer to place their trust in highly respected healthcare organizations such as the American Dental Association, and well over 100 more such organizations, worldwide, which support fluoridation.....or in antifuoridationists such as Greinke who consistently exhibit a total lack of respect for truth and accuracy.

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41. Greinke: "National Museum of Bahrain

- *Displays a skeleton of a young boy with skeletal fluorosis*
- *Skeletal fluorosis starts at 5,600-13,300 ppm"*

Facts:

A. The problems of countries with abnormally high levels of fluoride pollution, bear no relevance to the highly controlled optimally fluoridated water in the United States. There is no substance known to man, including plain water, which is not toxic at improper levels.

B. Was skeletal fluorosis attributable to optimally fluoridated water, then in the nearly 75% fluoridated US, hundreds of millions having chronically ingested fluoridated water during the past 72 years, this disorder would be rampant in this country by now. Skeletal fluorosis is so rare in the US as to be nearly non-existent.

C. According to the US Institute of Medicine, individuals would need to chronically consume in excess of 10 mg fluoride daily in order to even be at risk for skeletal fluorosis. Prior to consuming this large amount of fluoride from optimally fluoridated water in conjunction with all other normal sources of fluoride intake, water toxicity would be the concern, not fluoride. (6)

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42. Greinke: *"Living in Meadville with fluoridated water for 60 years puts a person 40% closer to developing skeletal fluorosis"*

Facts:

This is a ridiculous claim. First, Greinke assumes that the accumulation of fluoride is a linear constant over time. It is not. As explained previously in this document, fluoride accumulation in hard tissues is removed over time in accordance with its equilibrium with plasma fluoride levels.

Second, Greinke confuses concentration in parts per million, with dose in mg.

Third, there is no valid, peer-reviewed scientific evidence of any association of optimally fluoridated water with skeletal fluorosis. Claiming this water to be a contributing factor to skeletal fluorosis is akin to claiming a single drop of water to be a contributing factor in a tidal wave. While technically true, the removal of this drop of water would not diminish the tidal wave in any capacity, nor would the tidal wave occur in the absence of the source of the massive amount of other water in the wave. Substitute fluoride at the optimal level for the "drop of water" and the abnormally high amount of fluoride ions necessary to cause skeletal fluorosis for the "tidal wave."

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43. Greinke: *"Dose of fluoride depends on the amount of water a person consumes"*

Facts:

Yes, for every one liter of optimally fluoridated water consumed, 0.7 mg of fluoride is ingested. If enough of this water is consumed in conjunction with all other normal sources of fluoride intake, to even approach the threshold of adverse effects, water toxicity would be the concern, not fluoride.

44. Greinke: *"The younger you are, the higher percentage of fluoride that you ingest stays in your body"*

Facts:

There is no valid, peer-reviewed scientific evidence of any adverse effects in anyone, of any age, from bioaccumulation of fluoride from optimally fluoridated water.

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45. Greinke: *"Fluoride damages the brain"*

Facts:

There is no valid, peer-reviewed scientific evidence of any damage to the brain from optimal level fluoride.

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46. Greinke: *"Lowers IQ in children"*

Facts:

There is no valid, peer-reviewed scientific evidence of any adverse effect on IQ in anyone, of any age, from optimal level fluoride.

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47. Greinke: *"Need a margin of safety"*

Facts:

See item 25

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48. Greinke: *"April 12, 2010, Time Magazine included Fluoride in 'Top Ten Common Household Toxins' "*

Facts:

That which *Time Magazine* "includes" is of no relevance to optimally fluoridated water.

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49. Greinke: *"Fluoride is a neurotoxin"*

Facts:

There is no valid, peer-reviewed scientific evidence of neurotoxicity of optimal level fluoride.

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50. Greinke: *"pregnant females should not drink a drop of fluorinated water"*

Facts:

There is no valid scientific reason for pregnant females to not consume optimally fluoridated water. Greinke is not a dentist, or an MD. In dispensing such an unqualified "recommendation" he is contradicting established medical science and the recommendations of respected healthcare providers. As such, he is interfering with doctor-patient relationships, and arguably practicing medicine without a license.

"Drink water throughout the day, especially between meals and snacks. Drink fluoridated water (via a community fluoridated water source) or, if you prefer bottled water, drink water that contains fluoride."

----From Oral Health Care During Pregnancy: A National Consensus Statement—Summary of an Expert Workgroup Meeting © 2012 by the National Maternal and Child Oral Health Resource Center, Georgetown University.

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51. Greinke: *Neurotoxicity: 0.26 ppm [F]*

Facts:

There is no valid, peer-reviewed scientific evidence of neurotoxicity of fluoride at the concentration of 0.26 ppm.

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52. Greinke: *"Hirzy: Neurotoxicity: 0.05 mg [F]/day"*

Facts:

A. William Hirzy is a long time antifuoridationist/current paid lobbyist for the New York antifuoridationist faction, "FAN". Hirzy's lack of credibility on this issue was clearly demonstrated by the EPA rejection of a petition filed by Hirzy with that agency in 2014. After reviewing Hirzy's petition, the reviewers quickly ascertained that Hirzy had miscalculated his

data by 70-fold. When they corrected for this error, the reviewers determined that Hirzy's data demonstrated the opposite of what he had claimed.

B. There is no valid, peer-reviewed evidence of neurotoxicity of fluoride at the concentration of 0.05 mg/day

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53. Greinke: "Thiessen: Dental Fluorosis: 0.06 mg [F]/kg/daily dose"

Facts:

A. Kathleen Thiessen is a long time antifluoridationist, one of 3 fluoridation opponents to have been seated on the 2006 NRC Committee on Fluoride in Drinking Water in order to appease antifluoridationists and give them representation on that committee. Thiessen signed off on the final recommendations of that Committee along with the other 11 members. The only concerns cited by that Committee with fluoride at a concentration of 4.0 ppm in water, were risk of severe dental fluorosis, bone fracture, and skeletal fluorosis with chronic consumption of water with a fluoride content of 4.0 ppm or greater. This Committee made no recommendation to lower the EPA secondary MCL of 2.0 ppm, which it was also charged to evaluate. Water is fluoridated at 0.7 ppm, one third the level which Thiessen and the other 11 members of the 2006 NRC Committee made no recommendation to lower.

B. Thiessen's confirmation bias against fluoridation was clearly demonstrated in her endorsement of the 2013 study by William Hirzy noted in item #52 above.

When asked by a reporter. about Hirzy's study in which he made a 70-fold error, Thiessen replied:

*"I think this is a reasonable study, and that they haven't inflated anything," said Kathleen Thiessen, a senior scientist at SENES Oak Ridge Inc., a health and environmental risk assessment company." (12)*

54. Grienke: "American Many agencies have withdrawn support of water fluoridation

- American Cancer Society
- American Academy of Diabetes
- American Heart Association
- American Chiropractic Association"

Facts:

The American Cancer Society has not removed its name from the compendium of organizations recognizing the public health initiative of fluoridation.

B. Neither the American Academy of Diabetes, nor the American Heart Association have ever been on this list.

C. The American Chiropractic Association is a long time vehement opponent of fluoridation and has never been on this compendium. The ACA associates itself with antifluoridationist factions such as the New York group, "FAN", the fringe activist groups IAOMT, and "Fluoride Research". Chiropractors frequently present the same erroneous and false claims about fluoridation as do most other antifluoridationists.

D. Over 100 of the most highly respected healthcare and healthcare-related organizations in the world publicly recognize the public health benefit of fluoridation. This list may be found at the end of this document.

E. There is no credible organization in the world which opposes fluoridation.

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55. Greinke: *"There will be too much Fluoride in the water, and there will be the same levels of tooth decay"*

Facts:

A. The concentration of fluoride in optimally fluoridated water is 0.7 mg/liter. This is the official recommended concentration by the US Department of Health and Human Services. It is the recognized worldwide standard for optimal fluoride concentration, and is only a fraction of the US EPA maximum allowable concentration of 4.0 mg/liter fluoride in drinking water.

B. The dental decay reduction resultant of water fluoridation has been clearly demonstrated in countless peer-reviewed scientific studies, dating right up through 2016. A list of some of these studies is included at the end of this document.

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56. Greinke: *"Fluoride is a band-aid solution"*

Facts:

Water fluoridation has never been promoted or expected to be a "solution" for anything. It is simply the prudent use of a natural resource in our water which has been observed to result in significant reduction in dental decay when present at a certain concentration, with no adverse effects. Adjustment of the level of existing fluoride in water does not, by any means, preclude utilization of, and advocacy for, any other preventive measures.

57. Greinke: *"There will not be a change in tooth decay until citizens of Meadville decrease their sugar intake"*

Facts:

Greinke has no substantiation, education, training, experience, or any other qualifications, to make such a claim.

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58. Greinke: *"Recommendations for the Water Board:"*

Facts:

The Water Board should decide on whether it desires to rely upon recommendations of Ron Greinke, who has no qualifications to make credible recommendations on a healthcare issue such as fluoridation, and who has been clearly demonstrated in this document to be woefully deficient in his understanding of fluoridation and the science behind it.....or to rely on those recommendations of the overwhelming consensus of the worldwide body of respected science and healthcare.

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59. Greinke ; *"Fluoridated water should have a warning label for infants"*

Facts:

There is no need for any "warning label for infants" or anyone else, in regard to water fluoridation. The only consideration for infants is the chance of benign, barely detectable mild dental fluorosis in developing teeth if optimally fluoridated water is used to reconstitute powdered infant formula.

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60. Greinke: *"There should also be a warning label for women who are pregnant"*

Facts:

The American College of Ob/Gyn sees no problem with pregnant women consuming optimally fluoridated water. It is a mystery why Ron Greinke has personally decided otherwise.

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61. Greinke: *"Meadville should hold off on initiating Fluoride into the water until the new study of neurotoxicity is released"*

Facts:

There is no "new study of neurotoxicity". To what Greinke refers is the NTP follow-up to its recently released review of animal studies. In a document summarizing the NTP findings, the CDC stated:

"NTP used the GRADE system for rating the confidence in the body of evidence. Researchers concluded that there was a **low level-of-evidence** for learning and memory effects on rats or mice treated during gestation through adulthood. "Low level-of-evidence" reflects NTP's limited confidence in the apparent relationship between fluoride and learning and memory and a probability that the true effect may be substantially different from the apparent relationship." (13)

There is no expectation of any new revelations in the update.

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62. Greinke: *"Test for lead levels before and after adding Fluoride into the water"*

Facts:

The theory of lead leaching by fluoridation substances was debunked by Urbansky/Schock in 2000, Jackson in 2002, and Macek in 2006. This theory has no merit. (14)(15)(16)

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63. Greinke: *"Find a way to keep track of the money spent in the community on cosmetic dentistry due to dental fluorosis"*

Facts:

Keeping track of money spent on dental fluorosis which may be attributable to optimally fluoridated water is simple. It will be \$0.00. Mild dental fluorosis is barely detectable and requires no treatment.

Keeping track of the astronomical sums spent by individuals and taxpayer-born programs, such as Medicaid and Healthchoice, on dental and medical services associated with untreated dental decay, is a good bit more involved.

## References

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EPA response to William Hirzy petition  
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Mark D. Macek, Thomas D. Matte, Thomas Sinks, and Delores M. Malvi

## Effectiveness Studies

### 1) 2015

#### Results

In the 3 areas the proportion of children who received a dental examination varied; 77.5% (n=825) for the fluoridated area, 80.1% (n=781) for the pre-fluoridated area and 55.3% (n=523) for the non-fluoridated area. The mean dmft was 1.40 for the fluoridated area, 2.02 for the pre-fluoridated area and 2.09 for the non-fluoridated area. These differences were statistically significant ( $p<0.01$ ). Differences were also noted in the proportion of children who were caries free, 62.6% fluoridated area, 50.8% for the pre-fluoride area and 48.6% for the non-fluoride location.

#### Conclusion

The children living in the well-established fluoridated area had less dental caries and a higher proportion free from disease when compared with the other two areas which were not fluoridated. Fluoridation demonstrated a clear benefit in terms of better oral health for young children.

---The Dental Health of primary school children living in fluoridated, pre-fluoridated and non-fluoridated communities in New South Wales, Australia

Anthony S Blinkhorn, Roy Byun, George Johnson, Pathik Metha, Meredith Kay, and Peter Lewis

BMC Oral Health 2015, 15:9

### 2) 2000

#### RESULTS:

The prevalence of dental caries was inversely related and the prevalence of fluorosis was directly related to the concentration of fluoride in the drinking water. The mean DMFS in the communities with 0.8 to 1.4 ppm fluoride was 53.9 percent to 62.4 percent lower than that in communities with negligible amounts of fluoride. Multivariate analysis showed that water fluoride level was the strongest factor influencing DMFS scores. The prevalence of fluorosis ranged from 1.7 percent to 15.4 percent, and the increase in fluorosis with increasing fluoride exposure was limited entirely to the milder forms.

-----J Public Health Dent. 2000 Summer;60(3):147-53.

The prevalence of dental caries and fluorosis in Japanese communities with up to 1.4 ppm of naturally occurring fluoride.

Tsutsui A, Yagi M, Horowitz AM.

Department of Preventive Dentistry, Fukuoka Dental College, Fukuoka, Japan.

### 3) 2000

#### CONCLUSIONS:

Caries levels are lower among children with fluoridated domestic water supplies. Decay levels are much lower in 2002 than they were in 1984 and in the 1960s. The oral health of the less well off is worse than that of the rest of the population. The prevalence of dental fluorosis is higher amongst children and adolescents with fluoridated water supplies. Comparisons with 1984 data show an increase in the prevalence of fluorosis since that time.

---Community Dent Health. 2004 Mar;21(1):37-44.

Dental caries and enamel fluorosis among the fluoridated and non-fluoridated populations in the Republic of Ireland in 2002.

Whelton H, Crowley E, O'Mullane D, Donaldson M, Kelleher V, Cronin M.

Oral Health Services Research Centre, University Dental School and Hospital, Wilton, Cork, Ireland.

4) 1995

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#### CONCLUSIONS:

The ingestion of water containing 1 ppm or less fluoride during the time of tooth development may result in dental fluorosis, albeit in its milder forms. However, in these times of numerous products containing fluoride being available, children ingesting water containing 1 ppm fluoride continue to derive caries protection compared to children ingesting water with negligible amounts of fluoride. Thus, the potential for developing a relatively minor unesthetic condition must be weighed against the potential for reducing dental disease.

-----J Public Health Dent. 1995 Spring;55(2):79-84.

Dental fluorosis and caries prevalence in children residing in communities with different levels of fluoride in the water.

Jackson RD, Kelly SA, Katz BP, Hull JR, Stookey GK.

Oral Health Research Institute, Indianapolis, IN 46202-2876, USA.

5) 2004

#### Conclusions:

The results of this study support existing work suggesting water fluoridation together with the use of fluoridated dentifrice provides improved caries prevention over the use of fluoridated dentifrice alone. The social gradient between caries and deprivation appears to be lower in the fluoridated population compared to the non-fluoridated population, particularly when considering caries into dentine, demonstrating a reduction in inequalities of oral health for the most deprived individuals in the population.

---The association between social deprivation and the prevalence and severity of dental caries and fluorosis in populations with and without water fluoridation

Michael G McGrady, Roger P Ellwood, [...], and Iain A Pretty

## 6) 2012

### CONCLUSIONS:

Fewer studies have been published recently. More of these have investigated effect at the multi-community, state or even national level. The dmf/DMF index remains the most widely used measure of effect. % CR were lower in recent studies, and the 'halo' effect was discussed frequently. Nevertheless, reductions were still substantial. Statistical control for confounding factors is now routine, although the effect on per cent reductions tended to be small. Further thought is needed about the purpose of evaluation and whether measures of effect and study design are appropriate for that purpose.

----Community Dent Oral Epidemiol. 2012 Oct;40 Suppl 2:55-64.  
Effectiveness of water fluoridation in caries prevention.  
Rugg-Gunn AJ, Do L.  
Newcastle University, UK.

## 7) 2012

### CONCLUSIONS:

Data showed a significant decrease in dental caries across the entire country, with an average reduction of 25% occurring every 5 years. General trends indicated that a reduction in DMFT index values occurred over time, that a further reduction in DMFT index values occurred when a municipality fluoridated its water supply, and mean DMFT index values were lower in larger than in smaller municipalities.

----Int Dent J. 2012 Dec;62(6):308-14. doi: 10.1111/j.1875-595x.2012.00124.x.  
Decline in dental caries among 12-year-old children in Brazil, 1980-2005.  
Lauris JR, da Silva Bastos R, de Magalhaes Bastos JR.  
Department of Paediatric Dentistry, University of São Paulo, Bauru, São Paulo, Brazil.

## 8). 2012

### Abstract

The effectiveness of fluoridation has been documented by observational and interventional studies for over 50 years. Data are available from 113 studies in 23 countries. The modal reduction in DMFT values for primary teeth was 40-49% and 50-59% for permanent teeth. The pattern of caries now occurring in fluoride and low-fluoride areas in 15- to 16-year-old children illustrates the impact of water fluoridation on first and second molars.

----Caries Res. 1993;27 Suppl 1:2-8.  
Efficacy of preventive agents for dental caries. Systemic fluorides: water fluoridation.  
Murray JJ.  
Department of Child Dental Health, Dental School, University of Newcastle upon Tyne, UK.

9) 1993

**CONCLUSIONS:**

The survey provides further evidence of the effectiveness in reducing dental caries experience up to 16 years of age. The extra intricacies involved in using the Percentage Lifetime Exposure method did not provide much more information when compared to the simpler Estimated Fluoridation Status method.

-----Community Dent Health. 2012 Dec;29(4):293-6.

Caries status in 16 year-olds with varying exposure to water fluoridation in Ireland.

Mullen J, McGaffin J, Farvardin N, Brightman S, Haire C, Freeman R.

Health Service Executive, Sligo, Republic of Ireland.

10). 2012

**CONCLUSIONS:**

Children with severe dental caries had statistically significantly lower numbers of lesions if they lived in a fluoridated area. The lower treatment need in such high-risk children has important implications for publicly-funded dental care.

-----Community Dent Health. 2013 Mar;30(1):15-8.

Fluoridation and dental caries severity in young children treated under general anaesthesia: an analysis of treatment records in a 10-year case series.

Kamel MS, Thomson WM, Drummond BK.

Department of Oral Sciences, Sir John Walsh Research Institute, School of Dentistry, The University of Otago, Dunedin, New Zealand.

Research Design: Consecutive clinical case series: clinical details (diagnoses and the treatments provided) were recorded for children who had received comprehensive dental care under GA between 2000 and 2009. Age, gender, ethnicity, socio-economic status and fluoridation status (determined from the residential address) were also recorded.

**National and International Organizations That Recognize the Public Health  
Benefits of Community Water Fluoridation for Preventing Dental Decay**

Fluoridation Facts  
American Dental Association

Academy of Dentistry International  
Academy of General Dentistry  
Academy of Nutrition and Dietetics  
Academy for Sports Dentistry  
Alzheimer's Association  
America's Health Insurance Plans  
American Academy of Family Physicians  
American Academy of Nurse Practitioners  
American Academy of Oral and Maxillofacial Pathology  
American Academy of Orthopaedic Surgeons  
American Academy of Pediatrics  
American Academy of Pediatric Dentistry  
American Academy of Periodontology  
American Academy of Physician Assistants  
American Association for Community Dental Programs  
American Association for Dental Research  
American Association for Health Education  
American Association for the Advancement of Science  
American Association of Endodontists  
American Association of Oral and Maxillofacial Surgeons  
American Association of Orthodontists  
American Association of Public Health Dentistry  
American Association of Women Dentists  
American Cancer Society  
American College of Dentists  
American College of Physicians  
American College of Preventive Medicine  
American College of Prosthodontists  
American Council on Science and Health  
American Dental Assistants Association  
American Dental Association  
American Dental Education Association  
American Dental Hygienists' Association  
American Federation of Labor and Congress of Industrial Organizations  
American Fluoridation Society  
American Hospital Association

American Legislative Exchange Council  
American Medical Association  
American Nurses Association  
American Osteopathic Association  
American Pharmacists Association  
American Public Health Association  
American School Health Association  
American Society for Clinical Nutrition  
American Society for Nutritional Sciences  
American Student Dental Association  
American Water Works Association  
Association for Academic Health Centers  
Association of American Medical Colleges  
Association of Clinicians for the Underserved  
Association of Maternal and Child Health Programs  
Association of State and Territorial Dental Directors  
Association of State and Territorial Health Officials  
Association of State and Territorial Public Health Nutrition Directors  
British Fluoridation Society  
Canadian Dental Association  
Canadian Dental Hygienists Association  
Canadian Medical Association  
Canadian Nurses Association  
Canadian Paediatric Society  
Canadian Public Health Association  
Child Welfare League of America  
Children's Dental Health Project  
Chocolate Manufacturers Association  
Consumer Federation of America  
Council of State and Territorial Epidemiologists  
Delta Dental Plans Association  
FDI World Dental Federation  
Federation of American Hospitals  
Health Resources and Services Administration (HRSA)  
Hispanic Dental Association  
Indian Dental Association (U.S.A.)  
Institute of Medicine  
International Association for Dental Research  
International Association for Orthodontics  
International College of Dentists  
March of Dimes Birth Defects Foundation  
National Association of Community Health Centers  
National Association of County and City Health Officials

National Association of Dental Assistants  
National Association of Local Boards of Health  
National Association of Social Workers  
National Confectioners Association  
National Dental Assistants Association  
National Dental Association  
National Dental Hygienists' Association  
National Foundation of Dentistry for the Handicapped  
National Head Start Association  
National Health Law Program  
National Healthy Mothers, Healthy Babies Coalition  
Oral Health America  
Robert Wood Johnson Foundation  
Society for Public Health Education  
Society of American Indian Dentists  
Special Care Dentistry  
    Academy of Dentistry for Persons with Disabilities  
    American Association of Hospital Dentists  
    American Society for Geriatric Dentistry  
The Children's Health Fund  
The Dental Health Foundation (of California)  
U.S. Department of Defense  
U.S. Department of Veterans Affairs  
U.S. Public Health Service  
    Centers for Disease Control and Prevention (CDC)  
    National Institute of Dental and Craniofacial Research (NIDCR)  
World Federation of Orthodontists  
World Health Organization

