



## Response to Antifluoridationist Video "Our Daily Dose"

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The video "Our Daily Dose" is a piece of antifluoridationist dogma which brazenly exploits children and emotions felt for children, all throughout. It is rife with the same type of unsubstantiated claims, misinformation, and outright fabrications which are characteristic of antifluoridationists and their groups.

In regard to the claims made at specific points within the video:

1. 1:07: "We now know that fluoride is not a silver bullet"

Facts:

Fluoride was never expected to be a "silver bullet". Fluoridation was simply meant to obtain maximum benefit from a mineral which humans have ingested in water since the beginning of time.

2. 1:14 : "Recently the Environmental Protection Agency has added fluoride to its list of developmental neurotoxins"

Facts:

Fluoride has been on an EPA list of neurotoxins established over a decade ago.....along with over 100 other substances. There is nothing "recent" about this, and this list does not consider concentration levels. On that same EPA list are such commonly ingested substances as aspartame (sweetener), ethanol (beer and other alcoholic beverages), salicylate (aspirin), mepivacaine (commonly used local anesthetic), caffeine, and nicotine. Fluoride at the optimal level at which water is fluoridated is no more neurotoxic than are any of these other substances at their proper use levels. (1)

3. 1:20: "The EPA Commissioned National Research Council has determined fluoride to be an endocrine disruptor, causing the most severe harm to our thyroid gland."

Facts:

This is a reference to the report of the 2006 NRC Committee on Fluoride in Drinking Water. This Committee was charged to evaluate the adequacy of the EPA primary and secondary MCLs for fluoride, 4.0 ppm and 2.0 ppm respectively, to protect against adverse effects. The final recommendation of this Committee was for the primary MCL to be lowered from 4.0 ppm. The sole reasons cited by the Committee for this recommendation were the risk of severe dental

fluorosis, bone fracture, and skeletal fluorosis, with chronic ingestion of water with a fluoride content of 4.0 ppm or greater. Nothing else. Had this Committee deemed there to be any concerns with fluoride at this level being an "endocrine disruptor", or any other concerns with fluoride at this level, it would have been responsible for stating so and recommending accordingly. It did not.

Additionally, the NRC Committee made no recommendation to lower the secondary MCL of 2.0 ppm. Water is fluoridated at 0.7 ppm. one third the level which the 2006 NRC Committee on Fluoride in Drinking Water made no recommendation to lower.

In March of 2013, Dr. John Doull, Chair of the 2006 NRC Committee on Fluoride in Drinking Water made the following statement:

"I do not believe there is any valid, scientific reason for fearing adverse health conditions from the consumption of water fluoridated at the optimal level"

---John Doull, MD, PhD, Chair of the National Academy of Sciences, National Research Council 2006 Committee Report on Fluoride in Drinking Water. (2)

4. 2:10: References to aluminum companies, Manhattan Project, conspiracies, etc.

Facts:

This is all entirely irrelevant nonsense. Fluoridation is the simple adjustment of the concentration level of a mineral which has existed in our water forever, such that we will obtain maximum benefit from it, while strictly maintaining that level well below the threshold of adverse effects.

5. 2:50: "Dr. Kathleen Thiessen is one of the top scientific experts on fluoride in the world"

Facts:

Kathleen Thiessen is a long time, outspoken antifuoridationist. She has no credentials which would classify her as a "scientific expert on fluoride", much less one of the top such experts in the world. Thiessen was one of 3 antifuoridationists appointed to the 2006 NRC Committee in order to give representation on that committee for antifuoridationists.

Thiessen's blind spot and confirmation bias against fluoridation were clearly demonstrated in her endorsement of a 2013 study by William Hirzy, the current paid lobbyist for the New York antifuoridationist faction, "Fluoride Action Network". Hirzy used data from his study to petition the EPA to recommend cessation of use of HFA as a fluoridating substance. When EPA reviewers looked at Hirzy's data, however, they quickly determined that Hirzy had made a 70-fold error in his calculations. When correcting for these errors, the reviewers found Hirzy's data to demonstrate the exact opposite of what he had concluded. Upon learning of his error and rejection of his petition, Hirzy stated that he was "embarrassed", as well he should have been. (3)

Prior to the EPA review of Hirzy's data, Thiessen had been asked to comment on his study. Her response?

"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." (4)

Obviously, Thiessen has neither objectivity, nor credibility in regard to fluoridation.

6. 3:50 Angela C. Hind, MD: "So, even a little bit of the poison at a critical time during the child's development can have lifelong negative impacts on that child's brain."

Facts:

Angela Hind is simply an MD whose unsubstantiated personal opinion on fluoridation carries no more weight than that of any other MD. Her opinions are in direct contradiction to the overwhelming consensus opinion of the worldwide body of respected science and healthcare.

There is no valid, peer-reviewed scientific evidence of any adverse effect of optimal level fluoride on the development of any child's brain.

7. 4:01 Thiessen: "The evidence simply does not support the benefit of water fluoridation".

Facts:

The peer-reviewed scientific evidence overwhelmingly supports the benefits of water fluoridation. A list of a portion of the countless peer-reviewed scientific studies is included at the end of this document.

8. 4:08 Thiessen: [The evidence] does support, or at least suggests, the likelihood of a number of adverse health effects.

Facts:

There is no valid, peer-reviewed scientific evidence of any adverse health effects from optimal level fluoride. In its final recommendation, the 2006 NRC Committee on Fluoride in Drinking Water, of which Thiessen was a member, cited but 3 concerns in regard to fluoride at the level of 4.0 ppm in drinking water. These effects were 1) severe dental fluorosis, which does not occur at fluoride levels of 2.0 ppm or below, 2) increased bone fracture of which there is no valid evidence of such occurrence at the optimal level, and 3) skeletal fluorosis, which is so rare in the United States as to be nearly non-existent. This Committee made no recommendation to lower the EPA secondary MCL down from 2.0 ppm. Water is fluoridated at 0.7 ppm, one third the level at which the 2006 NRC Committee on Fluoride in Drinking Water made no recommendation to lower. (5)

Thiessen signed off on the final recommendation of the 2006 NRC Committee along with the other 11 members of this committee.

9. 4:50: Emails, Marilyn Monroe and other such nonsense are irrelevant and meaningless.

10. 5:03: "with children singing the praises of this new wonder drug treatment"

Facts:

A. It is doubtful that children were "singing the praises" of water fluoridation, or anything else.

B. There are no drugs, "wonder" or otherwise, involved in water fluoridation. There are simply fluoride ions, identical to those which have always existed in water.

11. 5:24: "Fluoride added to water is a drug"

Facts:

No court of last resort has ever affirmed this argument, in spite of repeated attempts by antifluoridationists through the decades. Fluoride is simply a mineral which has always existed in water.

12. 5:45 Thiessen: "It's an uncontrolled dosage"

Facts:

There is nothing uncontrolled about fluoridation. We know exactly how much fluoride is ingested from optimally fluoridated water. We also know that in the absence of chronic exposure to abnormally high levels of environmental fluoride, the daily amount of fluoride obtained from optimally fluoridated water in conjunction with that from all other normal sources, is well below the threshold of adverse effects, the same as is the case with chlorine and all other routine water additives.

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 miniscule few parts per million fluoride that are added to existing fluoride levels in your water, is so wide that "dose" is not an issue. (6)

13. 5:57 Thiessen, Hind: "It goes against informed consent"

Facts:

Informed consent pertains to treatment rendered. There is no informed consent required for local officials to determine the concentration level of existing minerals in public drinking water supplies under their jurisdiction.

14. 6:35: "Refusing medical treatment"

Facts:

There is no "medical treatment" involved in water fluoridation. No court of last resort has ever upheld the "forced medication" argument, in spite of repeated attempts by antifuoridationists through the decades to make that argument.

15. 7:11: Scare tactics in regard to Hydrofluorosilic Acid

Facts :

There are no "waste by-products" involved in water fluoridation, and fluoridation substances are not retrieved "from the smokestacks of phosphate industry." 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 carefully diluted to an 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 (decomposed). 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.

There are no detectable levels of "radioactive isotopes and solvents" in fluoridated water at the tap. The amount of heavy metals, which includes arsenic, are in barely detectable amounts far below US EPA mandated maximum allowable levels of safety.

A complete list of the contents of fluoridated water at the tap including precise amounts of any detected contaminants and the EPA maximum allowable level for each may be found in the "Fact Sheet on Fluoridation Chemicals" on the website of the National Sanitary Foundation.

16. 8:45 Thiessen, Hind: Scare Tactics in regard to optimally fluoridated water and the developing fetus.

Facts:

There is no valid, peer-reviewed scientific evidence of any adverse effects on fetuses from optimally fluoridated water.

17. 9:00: "Asbestos, viox, leaded gasoline, etc."

Facts:

None of this is of any relevance to water fluoridation. It is simply a cheap tactic of attempting to associate a very valuable public health initiative with harmful substances which otherwise have absolutely no connection to fluoridation.

18. 9:30: Garbled misrepresentation of the 1962 USPHS recommended optimal level, and the 2015 update of that recommendation.

Facts:

The optimal level of fluoride in drinking water is that recommended level at which maximum dental decay prevention will occur, with no adverse effects. This optimal level was originally set by the US Public Health Service in 1962, as a range of 0.7 ppm to 1.2 ppm. It was set as a range in order to allow for different amounts of water consumption between different climates. Recent scientific evidence has demonstrated that, due to air-conditioning and other modern amenities, there no longer exist any significant difference in water consumption due to climate differences. Thus, there is no longer a need for a range. In recognition of this fact and of the greater availability of fluoride now, than when the optimal was originally established, the CDC, in 2011, recommended that the optimal range be consolidated into simply the low end of that range, 0.7 ppm. After several years of careful study and consideration as to whether this consolidation would significantly reduce the dental decay prevention of fluoridation, the US DHHS determined that it would not. Thus, in keeping with the original goal of providing maximum dental decay protection while minimizing any risk of adverse effects, the US DHHS recently announced that the optimal recommendation had been officially consolidated into the low end of the previous optimum range. The current optimal level is 0.7 ppm, the level at which most water systems have been fluoridating for years, anyway.

19. 9:44: "the current EPA goal for arsenic is zero"

Facts:

The EPA maximum contaminant level goal (MCLG) is, by policy, zero for substances known to be carcinogenic, regardless the level at which carcinogenicity may occur. Arsenic at high levels may be carcinogenic. Therefore, as a matter of policy, the EPA MCLG for arsenic and countless other substances, is zero.

The EPA maximum contaminant level (MCL) is that level considered safe, and which can actually be attained with current technology. The EPA MCL for arsenic is 10 parts per billion. The maximum amount of arsenic detected in fluoridated water at the tap, under stringent testing by NSF International, is 0.6 ppb. The average amount of arsenic detected in fluoridated water at the tap is 0.15 ppb. (7)

Given the ubiquitous nature of arsenic throughout nature, and strong evidence that arsenic is a required nutrient, it is likely that a zero level of arsenic is neither attainable, nor desirable. (8)

20. 10:10: "Based on modern science, most countries have discontinued or never begun water fluoridation."

Facts:

This is an outright falsehood. The reasons that other countries may not fluoridate their public water supplies are myriad. They consist of such things as logistics of water systems rendering water fluoridation cost-prohibitive, use of fluoridated salt and/or milk programs in lieu of water fluoridation, existing levels of fluoride in water already at, or above the optimal level, and equal access for all members of a society to comprehensive dental care.

The following is an outline of the situation with fluoridation throughout the world taken from a recent issue of the newsletter of the New Zealand National Fluoride Information Service:

Countries with widespread water fluoridation programmes include Australia, the United States of America, Canada, the United Kingdom, Ireland, Spain, Israel, Brazil, Brunei, Chile, Argentina, Colombia, Hong Kong, South Korea, Singapore and Malaysia. Countries with limited water fluoridation programmes include Vietnam, Fiji, Papua New Guinea, and South Korea.

Several countries are unable to introduce water fluoridation programmes due to technical, financial or sociocultural reasons. As an alternative, both salt and milk have been found to be reliable and convenient vehicles for increasing fluoride intake to an optimal level for hard to reach and low socio-economic communities. Studies have found them to be as effective as community water fluoridation schemes.

Some European, Latin American, and Caribbean countries, including France, Switzerland, Germany, Costa Rica, Colombia and Jamaica currently use fluoridated salt schemes. Mexico and most Latin American and Caribbean countries (apart from Argentina, Brazil, Chile and French Guyana) have or have had salt fluoridation programmes.

A smaller number of countries currently have fluoridated milk programmes, including Bulgaria, Chile, China, Peru, Russia, Thailand and the United Kingdom

Some country regions have optimal amounts of naturally occurring fluoride which provides good protection for oral health. Examples of countries supplied with naturally fluoridated water at or around the optimum level needed to prevent dental decay include the United Kingdom (estimated 329,000 people), United States of America (estimated 10,078,000 people) Canada (estimated 300,000 people) and Australia (estimated 144,000 people).

It is estimated that 39.5 million people around the world have access to naturally fluoridated water at the optimal level although variations from one community to another over time make it difficult to calculate an accurate total.

Reasons for not fluoridating water supplies and/or using alternative ways of overcoming fluoride deficiencies are simply not restricted to attitudes towards freedom of choice and health concerns, although they may have been deciding factors for a few countries. This is another instance where opponents of fluoridation are making widespread simplistic claims (like Europe bans use of fluorosilicic acid) based on only a few facts, and ignoring (or hiding) the details.

21. 10:45: "WHO data" shows a steady decline in tooth decay in fluoridated and non-fluoridated countries.

Facts:

This is reference to the misrepresentation of WHO data by personnel of Connett's "fluoride action network". They have cherry-picked a couple of data points out of a cluster of data points for each of the countries, connected the dots, and proclaimed that to be a "trend". This is an excellent example of the method by which scientific data is misrepresented by Connett. (9)

22. 10:48 Thiessen: "We said in the NRC report that fluoride is an endocrine disruptor."

Facts:

The 2006 NRC final report did not state endocrine disruption or adverse effect effect on the thyroid as a concern with fluoride at the level of 4.0 ppm in water. Had this committee any concerns with endocrine disruption at this level of fluoride, it would have been responsible for so stating and recommending accordingly. It did not. Thus, Thiessen is stating that the NRC Committee of which she was a member, was either incompetent, or derelict in its responsibilities. (5)

23. 11:25: "A study from the British Medical Journal in 2015 showed that patients in fluoridated communities are nearly twice as likely to have hypothyroidism as those in non-fluoridated communities.

Facts:

This is in reference to the 2015 Peckham study published in the Journal of Epidemiology Community Health, not the British Medical Journal.

This hypothyroidism study was one performed by Stephen Peckham, a long-time anti-fluoridationist who is the former chair of the British anti-fluoridationist faction, "Hampshire Against Fluoride". This clear conflict of interest aside, his study has been widely criticized for having poor methodology, inadequate controls for confounders, and reaching a conclusion that is not supported by his data or the peer-reviewed scientific literature.

A. "As epidemiological evidence goes, this is about as weak as it gets."

"That is the comment by Prof David Coggon, Professor of Occupational and Environmental Medicine, University of Southampton, on a new paper claiming hyperthyroidism is linked to water fluoridation. Published yesterday in the peer-reviewed Journal of Epidemiology & Community Health, the paper is:"

"Peckham, S., Lowery, D., & Spencer, S. (2015). Are fluoride levels in drinking water associated with hypothyroidism prevalence in England? A large observational study of GP practice data and fluoride levels in drinking water. J Epidemiol Community Health, 1–6."

"Prof Coggon goes on to say:"

"Essentially the researchers have shown that after limited adjustment for demographic differences, there are somewhat higher rates of hypothyroidism (which can result from a number of different diseases) in four areas of England that have higher concentrations of fluoride in drinking water. It is quite possible that the observed association is a consequence of other ways in which the areas with higher fluoride differ from the rest of the country. There are substantially more rigorous epidemiological methods by which the research team could have tested their idea". (10)

B. "A major weakness of this study is the fact that other potential confounding factors have not been taken into account; this makes the conclusions regarding the community health utility of water fluoridation problematic. The strong conclusion of the paper by Peckham et al is not supported by the published literature. What is without question is that fluoride has had a remarkable and positive effect on our dental health, and the evidence base for this is overwhelming. The WHO recommends up to 1.5 mg/L for optimum dental health on the basis of decades of epidemiological study, which has consistently shown water fluoridation to be safe and cost-effective. The conclusions of the study by Peckham et al are simply not convincing, and should perhaps be taken with a large pinch of (fluoridated) salt." (11)

C. "The quality of the evidence is moderate with important methodological limitations, and should be interpreted with caution.

- There is a high risk of conflict of interest as the principal investigator is a long-time anti-fluoridation activist.

. The authors' assessment of the evidence--base is unbalanced and misinterpreted, contains inaccuracies and lacks citation of key studies.

- The results of this study do not support the consistent findings of three scientific reviews, which report insufficient evidence of an association between exposure to fluoride in drinking water and adverse thyroid effects."

----Prepared by Peel Public Health (Marco Ghassemi, Research and Policy Analyst) Feb. 26, 2015

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24. 12:25: "The Iowa study documents overdose of children"

Facts:

What the video omits is that the only result of infants and children exceeding the daily upper limit of fluoride resultant of optimally fluoridated water is risk of mild to very mild dental fluorosis during the teeth developing years of 0-8. Nothing else.

Mild to very 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. The 2006 NRC Committee considered mild dental fluorosis to not be an adverse effect. (12)

25. 12:46: "According to the CDC's latest data, 41% of American children have dental fluorosis"

Facts:

This is a false claim. The "41%" noted in the video is in reference to a 2010 CDC study by Beltran-Aguilar in which 41% of adolescents they examined were found to have signs of dental fluorosis.. This 41% was composed of 37.1% with mild to very mild dental fluorosis, both of which are barely detectable, benign effects requiring no treatment, and which have no effect on cosmetics, form, function, or health of teeth....with the other 3.8% being those with moderate dental fluorosis, attributable to improper ingestion of toothpaste and/or exposure to abnormally high levels of environmental or well-water fluoride during the teeth forming years of 0-8.

The hypocrisy of antifluoridationists is clearly evident by their lamenting "concern" for barely detectable mild dental fluorosis, while callously ignoring the lifetimes of extreme pain,

debilitation, development of serious medical conditions, loss of teeth, and life-threatening infection directly resultant of untreated dental decay which can be, and is, prevented by water fluoridation. (13)

26. 13:40: "Bill Mass refers to fluorosis as simply cosmetic perhaps even attractive."

Facts:

Three of the 4 pictures shown in the video are of moderate to severe dental fluorosis. Maas specifically referenced mild dental fluorosis. Mild dental fluorosis is indeed simply a cosmetic effect. The 2006 NRC Committee considered only severe dental fluorosis to be an adverse effect, with very mild, mild, and moderate dental fluorosis being simply cosmetic effects.

Peer-reviewed science has demonstrated that mild dental fluorosis is considered either a positive or neutral by children with mild dental fluorosis, and their parents....if they are even aware they have the effect. Whereas dental decay which can be prevented with water fluoridation is considered negatively.

"No associations between fluorosis and any OHRQoL [oral health quality of life] scales met statistical or MID thresholds. The difference (5.8 points) in unadjusted mean ECOHIS scores for the no-caries and moderate-to-high caries groups exceeded the MID estimate (2.7 points) for that scale." (14)

27. 14:40: "A landmark study from Harvard just out in 2015 shows dental fluorosis correlates directly with a lower IQ".

Facts:

This is yet another false claim. The "study" referenced is not "from Harvard", was a meta-review, and was not a "landmark" anything. It is simply a review whose lead researchers happen to be adjunct faculty members of the Harvard School of Public Health. That is the only tie to Harvard.

This study was one of elevated levels of fluoride in well-water of a Chinese community. China is notorious for its environmental fluoride pollution from burning coal factories. Water in the US is fluoridated at the minuscule optimal level of 0.7 ppm.

"A systematic review and meta-analysis of published studies on developmental fluoride neurotoxicity support the hypothesis that exposure to elevated concentrations of fluoride in water is neurotoxic during development." (15)

28. 15:30 Hind: "It makes absolutely no sense to expose our child to yet one more developmental neurotoxin."

Facts:

A. There is no valid, peer-reviewed scientific evidence of any neurotoxicity of fluoride at the optimal level at which water is fluoridated.

B. "Our child" is exposed to fluoride in water, fluoridated or not. Fluoridation simply ensures that he or she obtains maximum benefit from so doing, while strictly maintaining the level of that fluoride at a consistent level well below the threshold of adverse effects.

## References

(1) Building a Database of Developmental Neurotoxicants: Evidence from Human and Animal Studies

United States Environmental Protection Agency

[http://americanfluoridationsociety.org/wp-content/uploads/2016/04/epa\\_mundy.pdf](http://americanfluoridationsociety.org/wp-content/uploads/2016/04/epa_mundy.pdf)

(2) Doull statement

<http://www.ilikemyteeth.org/wp-content/uploads/2013/03/Doull-Email-on-CWF-March-2013.pdf>

(3) EPA Response To Hirzy Petition

<http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPPT-2013-0443-0004>

(4) <http://news.yahoo.com/arsenic-drinking-water-costly-change-could-lower-levels-103332699.html>

(5) Fluoride in Drinking Water: A Scientific Review of EPA's Standards Committee on Fluoride in Drinking Water, National Research Council

(6) Dietary Reference Intakes (DRIs): Tolerable Upper Intake Levels, Vitamins  
Food and Nutrition Board, Institute of Medicine, National Academies

<http://iom.edu/Activities/Nutrition/SummaryDRIs/~media/Files/Activity%20Files/Nutrition/DRIs/ULs%20for%20Vitamins%20and%20Elements.pdf>

(7) NSF Fact Sheet on Fluoridation Chemicals

<http://www.nsf.org/newsroom/nsf-fact-sheet-on-fluoridation-chemicals>

(8) Nutritional requirements for boron, silicon, vanadium, nickel, and arsenic: current knowledge and speculation.

Nielsen FH.

FASEB J. 1991 Sep;5(12):2661-7.

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

(10) <https://openparachute.wordpress.com/2015/02/25/paper-claiming-water-fluoridation-linked-to-hypothyroidism-slammed-by-experts/#comment-68458>

(11) ---Commentary on “Are fluoride levels in drinking water associated with hypothyroidism prevalence in England?”

A large observational study of GP practice data and fluoride levels in drinking water”

Grimes DR. J Epidemiol Community Health

Published Online First: doi:10.1136/jech-2015-205708

(12) The Association Between Enamel Fluorosis and Dental Caries in U.S. Schoolchildren

Hiroko Iida, DDS, MPH and Jayanth V. Kumar, DDS, MPH

<http://jada.ada.org/content/140/7/855.long>

(13) Prevalence and Severity of Dental Fluorosis in the United States, 1999-2004

Eugenio D. Beltrán-Aguilar, D.M.D., M.S., Dr.P.H.; Laurie Barker, M.S.P.H.; and Bruce A. Dye, D.D.S., M.P.H.

(14) Effects of enamel fluorosis and dental caries on quality of life.

Dent Res. 2014 Oct;93(10):972-9. doi: 10.1177/0022034514548705. Epub 2014 Aug 25.

Onoriobe U, Rozier RG, Cantrell J, King RS.

(15) Association of lifetime exposure to fluoride and cognitive functions in Chinese children: A pilot study

Anna L. Choi, Ying Zhang, Guifan Sun, David C. Bellinger, Kanglin Wang, Xiao Jing Yang, Jin Shu Li, Quanmei Zheng, Yuanli Fu, Philippe Grandjean

Neurotoxicology and Teratology

January–February 2015, Vol.47:96–101, doi:10.1016/j.ntt.2014.11.001

## 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 doi:10.1186/1472-6831-15-9<http://www.biomedcentral.com/1472-6831/15/9>

### 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. tutuia@college.fdcnet.ac.jp

<http://www.ncbi.nlm.nih.gov/pubmed/11109211>

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.

Source

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

4) 1995

<http://www.ncbi.nlm.nih.gov/pubmed/7643331>

**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.

Source

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

<http://www.ncbi.nlm.nih.gov/pubmed/15074871>

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

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3543717/>

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. doi: 10.1111/j.1600-0528.2012.00721.x.

Effectiveness of water fluoridation in caries prevention.

Rugg-Gunn AJ, Do L.

Source

Newcastle University, UK. [andrew@rugg-gunn.net](mailto:andrew@rugg-gunn.net)

<http://www.ncbi.nlm.nih.gov/pubmed/22998306>

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.

Source

Department of Paediatric Dentistry, University of São Paulo, Bauru, São Paulo, Brazil. [jrlauris@fob.usp.br](mailto:jrlauris@fob.usp.br)

<http://www.ncbi.nlm.nih.gov/pubmed/23252588>

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.

Source

Department of Child Dental Health, Dental School, University of Newcastle upon Tyne, UK.

<http://www.ncbi.nlm.nih.gov/pubmed/8500120>

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.

Source

Health Service Executive, Sligo, Republic of Ireland. joej.mullen@hse.ie

<http://www.ncbi.nlm.nih.gov/pubmed/23488212>

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.

Source

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.

<http://www.ncbi.nlm.nih.gov/pubmed/23550501>