



Response to Waterlogic Article

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The ensuing is a response to an article on water fluoridation which appeared recently on the website of *Waterlogic*, a company which manufactures and sells water filtering systems for home and office ranging in price from \$200-\$600. According to its website, the company has its "state-of-the-art Waterlogic-owned manufacturing facility" located in China. Given the obvious potential financial benefit to this company from any warranted or unwarranted fear that it can provoke about public drinking water supplies, it is not surprising that this article is rife with false and misleading information. (1)

In seeking to portray controversy about fluoridation, the article on one hand gives equal weight to erroneous opinions of a scientist well known for her outspoken bias against fluoridation and the false claims and personal anecdotes of a local antifuoridationist activist, with the authoritative opinions of the Dental Director for the State of Oregon and the National Fluoridation Water Engineer for the U.S. Centers for Disease Control, on the other. It presents unsubstantiated claims against fluoridation which have no foundation in the peer-reviewed science, as being credible arguments, while failing to acknowledge the volume of credible scientific evidence which refutes those claims. In doing so, Waterlogic creates the impression that water fluoridation is a questionable practice with equally valid arguments on both "sides". In reality, the public health initiative of water fluoridation is overwhelmingly supported within the peer-reviewed scientific literature and the worldwide body of respected science and healthcare, with there being no credible organizations, worldwide, which oppose it.

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Response to claims by Waterlogic

1. Waterlogic: "New research by the Environmental Protection Agency (EPA) and the National Research Council (NRC) of the National Academies of Science) found an increase in the prevalence of dental fluorosis (white spots on teeth or pitting on the surface of a tooth),"

Facts:

The only dental fluorosis which may be associated with optimally fluoridated water is mild to very mild, a barely detectable effect which causes no adversity 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. (2)

"Pitting on the surface of the teeth" is a defining characteristic of severe dental fluorosis. This level of dental fluorosis does not occur in association with water with a fluoride concentration of 2.0 ppm or less. Neither the EPA nor NRC have found any increases in this level of dental fluorosis in recent years. (3)

2. Waterlogic: "Despite this government mandate in April 2015 [resetting of optimal level], experts on both sides continue to stand their ground on the benefits and pitfalls of adding fluoride to our drinking water."

Facts:

The optimal level of fluoride in drinking water is not a mandate. It is a non-enforceable recommendation of the US Department of Health and Human Services.

3. Waterlogic: "While the recommended levels of fluoridation sat between 0.7 mg/L and 1.2 mg/L [in the 1960s], the Department of Health and Human Services concluded that there should be a lower concentration of fluoride in warmer areas because children 'drank more water on warm days'."

Facts:

The recommended optimal level was set as a range of 0.7 ppm to 1.2 ppm in order to allow for different levels of water consumption due to differences in climate. DHHS did not conclude that the level should be lower than this range.

4. Waterlogic: "Such studies began to show that the higher the concentration of fluoride in the water (between 0.3 mg/L to 1.2 mg/L), the greater instances of dental fluorosis in those children, increasing from 13.5% to 41.4%."

Facts:

Assumedly, the 41% 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. (4)

5. Waterlogic: "The CDC reported that one group that is most critically affected by fluorosis and demonstrating higher sensitivity to fluoride are African Americans and Hispanics. These two groups were shown as having had more severe cases of fluorosis than whites."

Facts:

The CDC did not state that African Americans and Hispanics are the "most critically affected by fluorosis". It stated:

"Non-Hispanic blacks had higher proportions of very mild and mild fluorosis than did non-Hispanic white participants" (5)

Mild to very mild dental fluorosis is not even classified as an adverse effect, much less "critically affecting" anyone.

6. Waterlogic: "Dr Kathy Thiessen, Director and Senior Scientist at the Oak Ridge Center for Risk Analysis in Tennessee is strongly opposed to fluoridation."

Facts:

Kathleen Thiessen is a long time, outspoken fluoridation opponent. Her confirmation bias against fluoridation was clearly demonstrated in her endorsement of a 2013 study by William Hirzy, the current paid lobbyist for the New York antifluoridationist faction, "Fluoride Action Network", in which the EPA determined that Hirzy had made a 70-fold error in his calculations. When correcting for these errors, the EPA reviewers found Hirzy's data to demonstrate the exact opposite of what he had concluded.

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." (6) (7)

7. Thiessen: "[Recent data] ... indicates no significant benefit from water fluoridation, but a significant association with dental fluorosis, a situation that will not be avoided by fluoridating all cities at 0.7.mg/L ... At the very least, even if dental fluorosis is considered only a cosmetic problem, it takes money to treat to improve a person's appearance and perhaps his or her self-esteem ... A growing number of studies indicate associations between dental fluorosis and increased risk of various health problems. Considerable evidence indicates that water fluoridation is an unsafe and unethical practice, with little or no real benefit."

Facts:

A. Countless peer-reviewed scientific studies clearly demonstrate the effectiveness of fluoridation in reducing dental decay in entire populations. A list of some of these studies is provided at the end of this document, including several from within the past 5 years.

B. The only dental fluorosis which may be associated with optimally fluoridated water is mild to very mild, a barely detectable effect which causes no adverse effect on cosmetics, form, function, or health of teeth. Mild dental fluorosis requires no treatment. It therefore requires no money to treat it.

C. Mild dental fluorosis has been demonstrated by peer-reviewed science to have either a positive or neutral effect on perception of appearance and self esteem, whereas dental decay which can be prevented by water fluoridation has been demonstrated to have a negative effect on perceptions of appearance and self esteem in addition to resulting in significant expense over a lifetime to treat it, and the resultant medical expenses when it goes untreated. (8)

D. There is no credible peer-reviewed scientific evidence that demonstrates any association of mild dental fluorosis with "increased risk of various health problems".

E. There is no credible body of scientific evidence which indicates that water fluoridation is either unsafe, unethical, or that it has "little or no real benefit".

8. Waterlogic: "On the other side, there are several vocal groups and individuals who cite fluoridation as the source of numerous health issues, ranging from thyroid conditions to autism and attention-deficit hyperactivity disorder (ADHD)."

Facts:

There is no credible, peer-reviewed scientific evidence of any association of optimally fluoridated water with any adverse health conditions, including "thyroid conditions, to autism and attention-deficit hyperactivity disorder (ADHD)."

9. Waterlogic: "Laura Pressley, Ph.D., an anti-fluoridation advocate, believes that fluoridation was a factor in her diagnosis of Hashimoto's Thyroiditis, an autoimmune disorder that affects the thyroid. She had been taking medication for the condition and showed signs of fatigue, brain fog, loss of hair, and weight gain."

Facts:

A. Laura Pressley is an outspoken fluoridation opponent who owns a bottled rainwater company in Texas. Her career was spent as an engineer in the semi-conductor industry. She is a founding member of the Steering Committee of the antifluoridationist faction, "Fluoride Free Austin". (9)

Along with her antifluoridation views and activities, Laura Pressley is a believer in the theory that the 9/11 World Trade Center attacks were part of a conspiracy linked to the U.S. Military.

"Pressley's [views] were cataloged this week by the Austin Chronicle. And there's another wrinkle to the candidate's perspectives: A newly-discovered recording shows that Pressley also

claims that the attacks of September 11, 2001 on the World Trade Center and the Pentagon were actually a controlled demolition." (10)

B. There is no valid support within the peer-reviewed scientific literature to support Pressley's unsubstantiated claim of a link between her "Hashimoto's Thyroiditis" and fluoridated water.

10. Waterlogic: "She [Pressley] also noted the difference between naturally occurring fluoride and the fluoride added to water in her home state of Texas, "Because of the oil deposits and geology, you'll have natural levels of calcium fluoride. That is a different chemical than what's put in the tap water. With calcium fluoride, the fluoride is bound to the calcium. The chemical being put into the tap water is an acid. There's no calcium associated with it, so the fluoride attacks the calcium in your body. It attacks your bones, it attacks your teeth -- that's why you get pitting -- and in your bones, you'll get osteomalacia, a softening of the bones."

Facts:

A. Fluoride is a negatively charged atom of the element fluorine. All such atoms of fluorine are identical, regardless the source compound from which they are released. Calcium fluoride does not exist in groundwater.

As water flows over rocks, it picks up fluoride ions leached from calcium fluoride and fluorosilicates in those rocks. These fluoride ions are to what is referred as being "naturally occurring" fluoride. As fluorosilicates are introduced into drinking water during fluoridation they are immediately and completely hydrolyzed (dissociated) into fluoride ions and barely detectable trace contaminants. These fluoride ions are identical to those "naturally occurring" fluoride ions. After this point, the fluorosilicates no longer exist in that water. (11)

B. As calcium fluoride does not exist in groundwater, there is no calcium associated with the "naturally occurring" fluoride. All of the fluoride ions are identical, with identical properties.

There is no valid, peer-reviewed scientific evidence that optimal level fluoride ions "attacks your teeth -- that's why you get pitting -- and in your bones, you'll get osteomalacia, a softening of the bones."as Pressley claims.

11. Waterlogic: "In addition to a Harvard study linking fluoridation to autism and ADHD, some of the concerns the public has about fluoridation's impact on overall health stem from uncertain evidence of fluoride causing bone cancer"

Facts:

A. There is no Harvard study linking fluoridation to autism. Assumedly, the study to which *Waterlogic* refers was a 2015 ADHD study by Malin, et al, which had no association with Harvard. Malin concluded a correlation between reported cases of ADHD and fluoridated water. This study has been widely discredited in the scientific literature for its poor methodology, inadequate control for variables, and reaching a conclusion not supported by the peer-reviewed science. (12)

"It's [Malin, et al] an ecological study design with 51 observations (50 states & DC), and is not appropriate to test a hypothesis. ADHD prevalence was based on self-reported data, and hence

had a potential of misclassification of disorder status. State-wide fluoridation measures were used. Individuals' exposure to fluoridation were not measured. Due to ecological assessment of exposure to fluoride in drinking water and the use of prevalence data of self-reported ADHD and water fluoridation from different years, the findings are at high risk for ecological fallacy. Authors did not adjust for important confounders (smoking, low birth weight, age, sex etc.). Moreover, authors' poor literature review and skewed interpretation of literature concerning fluoride and neurodevelopmental defects may have introduced bias." (13)

As clear demonstration of the poor control for variables by Malin, a 2015 study by Huber, et al, utilizing the same data as did Malin, concluded that the reported cases of ADHD were associated with elevation at which the children resided, not with water fluoridation. (14)

B. There is overwhelming scientific consensus that there is no association of optimally fluoridated water with bone cancer.

From the American Cancer Society webpage cited by Waterlogic:

"More than 50 population-based studies have looked at the potential link between water fluoride levels and cancer. Most of these have not found a strong link to cancer. Just about all of the studies have been retrospective (looking back in time). They have compared, for example, the rates of cancer in a community before and after water fluoridation, or compared cancer rates in communities with lower levels of fluoride in drinking water to those with higher levels (either naturally or due to fluoridation). Some factors are hard to control for in these types of studies (that is, the groups being compared may be different in ways other than just the drinking water), so the conclusions reached by any single study must be looked at with caution." (15)

A list of peer-reviewed literature debunking claims of cancer association with fluoridated water may be found at the end of this document.

12. Waterlogic: "Pressley questioned even the new, lower, recommended dose of fluoride in public water supplies, asking, 'Why would we be medicating people with this fluoridated water, one-size-fits-all to a child versus a man that's 6' tall? That makes no sense to me. We should not be putting any type of water to treat any type of disease because people have different sensitivities. Those who have hypothyroidism are going to be more negatively affected than those that don't. Children, babies -- they're going to be more affected.' "

Facts:

- A. There is no "new, lower recommended dose of fluoride in public water supplies". This is a misrepresentation of the recent resetting of the recommended optimal concentration of fluoride in drinking water by the U.S. Department of Health and Human Services
 - i) The recommendation involves concentration, not dose.
 - ii) The recommended optimal concentration was not lowered, it was consolidated into a single point at the low end of the previous optimal range.

B. There is no medication involved in water fluoridation. There are simply fluoride ions, identical to those which have always existed in water. No court of last resort has ever affirmed the "forced medication" argument of antifluoridationists.

C. There is no valid, peer-reviewed scientific evidence of any "sensitivities" to optimal level fluoride by anyone, of any age group.

D. Just as with chlorine, ammonia, and the myriad other routine water additives, the range between the optimal level of fluoride and the threshold of adverse effects is so broad that there are no concerns with "dosage" in regard to optimally fluoridated water.

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. (16)

13. In regard to the groups noted for "further education"

Those listed against fluoridation:

A. Fluoride Action Network- A New York antifluoridationist faction notorious for disseminating misinformation about fluoridation.

B. Fluoride Free Austin- an antifluoridationist faction whose website is rife with false claims and misinformation.

C. NoFluoride: Citizens for Safe Drinking Water- an antifluoridationist faction whose website is rife with false claims and misinformation.

Those listed for fluoridation:

A. Fluoride Information Network- A group composed of educators, medical and public health practitioners, dentists, parents and concerned citizens knowledgeable about fluoridation who have posted on their website fully verifiable facts supported by valid scientific evidence.

B. I Like My Teeth Campaign for Dental Health- a website of the American Academy of Pediatrics

C. National Center for Fluoridation Policy & Research- From its website: "The National Center for Fluoridation (NCF) was developed in 1996, with the Center's Internet web site being established in 1998 at the School of Dental Medicine, State University of New York at Buffalo, to serve as a central repository for information regarding all aspects of community water fluoridation. The Center became a major program of Oral Health America in 2004 and more

recently, in November 2011, became the sole responsibility of the International Health Management & Research Associates"

References

(1) WaterLogic website

http://www.waterlogic.com/en-us/?gclid=CjwKEAju3qu5BRC-0uCW8O6Y5zcSJAA_WtdLmlSEHElgwdm1hawk5pb_WRGnccMCWPZVJT62kUfI3RoCc93w_wcB

(2) The Association Between Enamel Fluorosis and Dental Caries in U.S. Schoolchildren
Hiroko Iida and Jayanth V. Kumar
J Am Dent Assoc 2009;140;855-862

(3) Fluoride in Drinking Water: A Scientific Review of EPA's Standards
<http://www.nap.edu/catalog/11571.html>
Pg 114

(4) 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.

(5) Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis --- United States, 1988--1994 and 1999--2002
US CDC
<http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5403a1.htm>

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

(7). <http://www.environmentguru.com/pages/elements/transporter.aspx?id=1297832>

(8) J Dent Res. 2014 Oct;93(10):972-9. doi: 10.1177/0022034514548705. Epub 2014 Aug 25. Effects of enamel fluorosis and dental caries on quality of life.
Onoriobe U1, Rozier RG2, Cantrell J3, King RS4.

(9) Background Investigation: Laura Pressley
Here's What the Public Records Say About the City Council Candidate
by Rebecca LaFlure
© The Austin Bulldog 2012
Posted Monday, April 30, 2012 1:59pm

http://www.theaustinbulldog.org/index.php?option=com_content%26view%3Darticle%26id%3D196:background-investigation-laura-pressley%26catid%3D3:main-articles

(10) District 4 Council Candidate Laura Pressley's Views Include 9/11 Conspiracy
<http://kut.org/post/district-4-council-candidate-laura-pressleys-views-include-911-conspiracy>

(11) Reexamination of Hexafluorosilicate Hydrolysis By F NMR and pH Measurement
William F. Finney, Erin Wilson, Andrew Callender, Michael D. Morris, and Larry W. Beck
Environmental Science and Technology/ Vol 40, No. 8, 2006

(12) Exposure to fluoridated water and attention deficit hyperactivity disorder prevalence among children and adolescents in the United States: an ecological association
Environmental Health Sample
doi:10.1186/s12940-015-0003-1
Ashley J Malin (ashleyjs@yorku.ca)
Christine Till (ctill@yorku.ca)

(13) Shivani Arora, BDS, MPH, CPH
-----<http://www.fluoridescience.org/articles/exposure-to-fluoridated-water-and-attention-deficit-hyperactivity-disorder-prevalence-among-children-and-adolescents-in-the-united-states-an-ecological-association/#sthash.tQUCMKJi.dpuf>

(14) J Atten Disord. 2015 Mar 25. pii: 1087054715577137. [Epub ahead of print]
Association Between Altitude and Regional Variation of ADHD in Youth.
Huber RS, Kim TS, Kim N, Kuykendall MD, Sherwood SN, Renshaw PF, Kondo DG.

(15) Water Fluoridation and Cancer Risk
American Cancer Society
<http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/water-fluoridation-and-cancer-risk>

(16) 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>

Studies Contradicting Claims of Cancer

There is overwhelming consensus that there is no valid evidence linking water fluoridation to ANY cancer.

A review of worldwide studies by The International Agency for Research on Cancer (IARC) concluded there was no evidence of an increase in cancer rates associated with fluoride in drinking water.

-----International Agency for Research on Cancer, IARC Monographs on the Evaluation of Carcinogenic Risks of Chemicals to Humans, Volume 27. 1982

• The San Francisco Department of Public Health Occupational Health and Environmental Health Section states that within a search of relevant peer reviewed medical literature to September 2005, a total of seven (7) epidemiological studies were discovered, none of which showed a relationship between fluoride exposure and osteosarcoma

----- (Moss et al. 1995, Gelberg et al. 1995, Freni and Gaylor 1992, Grandjean et al. 1992, McGuire et al. 1991, Mahoney et al. 1991, Hrudey et al. 1990).

-----San Francisco Department of Public Health, Current Scientific Evidence: Water Fluoridation is not associated with osteosarcoma. 2005,

Three small case control studies of osteosarcoma (McGuire et al 1995, Gelberg et al 1995, Moss et al 1995) have been reviewed by the Australian National Health and Medical Research Council in 1999. None of these studies found any evidence of fluoride increasing the risk of osteosarcoma.

-----Ahokas, J., et al., Review of water fluoridation and fluoride intake from discretionary fluoride supplements: review for NHMRC. 1999. Royal Melbourne Institute of Technology and Monash University: Melbourne.

The York Review (2000), a systematic review of 214 studies of varying quality, found no clear association between fluoridation of water and osteosarcoma.

-----McDonagh M S, et al., Systemic review of water fluoridation. BMJ, 2000. 321.

A study by Hoover et al found no relationship between osteosarcoma and fluoridation. This study is important because of the large numbers involved (125,000 incident cancers, and 2.3 million cancer deaths).

-----Medical Research Council Working Group, Water fluoridation and health. 2002, Medical Research Council: United Kingdom.

In 2002 the British Medical Research Council agreed that overall, evidence does not suggest that artificially fluoridated water increase the risk of cancer.

-----Medical Research Council Working Group, Water fluoridation and health. 2002, Medical Research Council: United Kingdom.

A review of fluoride by the Scientific Panel on Dietetic Products, Nutrition and Allergies published by the European Food Safety Authority in 2005, found no increased risk of cancer from drinking fluoridated water.

-----European Food Safety Authority, Opinion of the Scientific Panel on Dietetic products, Nutrition and Allergies on a request from the Commission related to the Tolerable Upper Intake Level of Fluoride. The EFSA Journal, 2005. 192: p. 1-65.

"CONCLUSIONS::

The findings from this study provide no evidence that higher levels of fluoride (whether natural or artificial) in drinking water in GB lead to greater risk of either osteosarcoma or Ewing sarcoma."

Int J Epidemiol. 2014 Jan 14. [Epub ahead of print]

Is fluoride a risk factor for bone cancer? Small area analysis of osteosarcoma and Ewing sarcoma diagnosed among 0-49-year-olds in Great Britain, 1980-2005.

Blakey K, Feltbower RG, Parslow RC, James PW, Gómez Pozo B, Stiller C, Vincent TJ, Norman P, McKinney PA, Murphy MF, Craft AW, McNally RJ.

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

<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

<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>