FLUORIDATING AUSTRALIAN WATER SUPPLIES – AT WHAT COST?

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In some countries like Australia, water fluoridation is widely accepted as reducing tooth decay. Other countries have rejected or discontinued adding fluoride to their water supply, after looking at the large amount of research that concludes added fluoride has a toxic effect on humans that can lead to an increase in a wide range of serious health problems in adults and children.

Dental health in people of all ages is crucial to general health. Healthy, functioning teeth allow us to chew our food properly for our bodies to receive nutrients from the food we eat. Missing or decayed teeth impede proper chewing and compromise nutrition, not to mention the state and national dental health bills.

Since the 1960's and 70's most Australian towns in all states except Queensland have had fluoride added to their water supplies, with the aim of reducing dental decay in children and adults. Queensland is on record as having the worst dental health in the country and is now set to follow the other states by fluoridating its water supply and in so doing, planning to improve the dental health of its population.

DENTAL DECAY IN AUSTRALIA

Dr Martin Dooland, CEO of Dental Health Services in South Australia, says that where ten years ago South Australian children had one of the lowest rates of tooth decay in the developed world, recently there has been a major increase in decay rates which is showing up in adults as well. "Australia now has among the worst oral health for adults in the developed world." [1]

A recent report from Jason Armfield of the Australian Institute of Health and Welfare Health at the University of Adelaide [2] states that tooth decay is rampant among children; nearly half of all six year olds have a decayed, missing or filled baby tooth and most 12 year olds have cavities in their adult teeth. Mr Armfield says that there has been steady increase in dental disease among children since the 1990's and that oral health in Australia is worsening. Currently in Australia there are 650,000 people on dental waiting lists. According to this report, factors involved in this decline are low socio economic groups, poor access to dental care, a higher exposure to sugary foods and poor exposure to fluorides. The report also includes a recommendation from John Matthews, president of the Australian Dental Association for the government to increase its spending on the battle against tooth decay, by reintroducing the free school dental service with free dental clinics in primary schools.

Dental Decay Rising in Fluoridated Areas

Even in states where water supplies have been fluoridated for up to 40 years, dental health in Australia is deteriorating, bringing into question the effectiveness of water fluoridation. Dental and health authorities in Australia associate improved dental health with fluoridated water supplies and it is on this basis that the Queensland government is about to proceed with fluoridating its state's water supplies.

Unquestionably, childhood dental decay and the problems it causes into adulthood, is a costly problem for any government. Fluoridating the water supply is considered to be a cost effective way to treat entire populations for tooth decay and in so doing substantially reduce governments' dental bills. It is a worthy notion with good intent behind it. It would be nice indeed if it were a simple case of cause and effect.

Dentists Question Fluoride's Benefits – Or Not

Many dentists and researchers now refute the notion that adding fluoride to water supplies helps to prevent tooth decay by strengthening tooth enamel. Let's say for a moment though, that this is a real benefit. It this were the case, and tooth decay in Australia was reduced to minimal levels, the amount of research internationally that cites multiple health risks from water fluoridation is massive. It appears that professionals who support water fluoridation are not paying due attention to literally thousands of scientists, doctors and researchers internationally who are publishing some grim results on the health effects of excess fluoride. Some research indicates that benefits of fluoride are largely topical, (applying fluoride directly to the teeth) and not through drinking water. If this is the case, the systemic exposure of every man, woman and child through the water supply makes little sense, when topically applied fluoridated toothpaste is universally available.

ABOUT FLUORIDE

Fluoride is found naturally in all water, in varying amounts. Many countries have the problem of too much fluoride in water, causing *dental fluorosis,* where abnormally high levels of fluoride accumulate in the body, affecting teeth and bones. *Dental fluorosis,* that *causes* teeth to become mottled, discoloured and pitted, can also occur in areas where water is artificially fluoridated. Naturally occurring fluoride is *calcium fluoride,* but it is *sodium fluoride* that is added to water supplies. Sodium

fluoride is a by-product of aluminium production and this is also added to some toothpastes. When water deemed to contain too little fluoride has extra fluoride added to it, the actual amount that individuals receive is completely unknown. It is called by some as 'mass medication' because each person in a fluoridated area drinks fluoridated water for their lifetime, with no routine monitoring of their fluoride levels, although in certain instances some pathology labs can measure levels. There is absolutely no way of measuring the dosage that individuals receive on a daily basis, or over a period of years. Individual dietary, dental and lifestyle patterns can vary the amount of fluoride intake enormously. As with all chemicals and minerals, children absorb far higher amounts than adults. A person's diet, general state of health as well as the body's ability to dispose of fluoride all affect how exposure to fluoride manifests itself. Water fluoridation proponents appear to be unconcerned about this. It is precisely this point that water fluoridation's opponents are so concerned about, because of the well documented cumulative effects of fluoride on human health.

Food Sources Of Fluoride

Fluoride is abundant in food. [3] A US parent based website lists fluoride levels in foods using 41 research references including an Australian study on the fluoride content of infant formulas. [4]

(ppm = parts per million, mg/kg = milligrams per kilogram, mg/l = milligrams per litre)

- Apple, 1 medium: 1mg
- Beef - mechanically de-boned: 14.0-42mg/kg, hand de-boned: 2.0-4.0mg/kg
- Black Tea: 7.8mg per cup
- Black Tea (16 samples): 30-340 mg/kg
- Breast milk: 0.004ppm, 250 times lower than levels in fluoridated water. Infant formulas should be made with filtered water
- Coca Cola Classic: 0.82 -0.98mg/l
- Diet Coke: 1.12mg/l
- Infant foods (238): 0.01-8.38mg/kg
- Mackerel: 26.0mg/kg
- Pork - mechanically de-boned: 9.0-14.0mg/kg, hand de-boned: 2.0-3.0 mg/kg
- Potatoes: 0.3 - 13mg/kg
- Rice: 14.0mg/kg
- Sardines: 61.0mg/kg
- Sea Salt: 7.0mg/kg
- Sugar: 13.0 mg/kg
- Water: Tap in fluoridated areas: 0.7-1.2mg/l, Reverse Osmosis: 0.05mg/l
- Wheat: 7.2mg/kg

Non-Food Sources of Fluoride

Apart from drinking fluoridated water, the other main source of fluoride is fluoridated toothpaste. Fluoridated toothpastes contain 500 – 1500ppm of fluoride. It is impossible to regulate how much and how often individuals brush their teeth, how much toothpaste they use and if they are in the habit of swallowing their toothpaste or spitting it out or swallowing it, as most children do. Additional fluorine is also found in agricultural products and medications. In the June 2006 issue of 'Chemical and Engineering News' [5] the cover story states: "As many as 30−40% of agrochemicals and 20% of pharmaceuticals on the market are estimated to contain fluorine, including half of the top 10 drugs sold in 2005." These drugs include Larium, Paxil, Prozac, Luvox, Celebrex, Iressa, Ciprofloxacin and Risperdal. Aluminium smelters and fertilizer production plants can cause environmental fluoride pollution, which increases our exposure to fluoride. [6]

Other Ways of Preventing Tooth Decay

For all the studies that support water fluoridation for its effect on tooth enamel and lessening tooth decay, there are as many that state the level of tooth decay is the same in non-fluoridated water areas, saying that generally, since World War Two, better nutrition has lowered the levels of tooth decay. Australia's increase in the level of tooth decay is said by dentists to be caused in part by the increase in the amount of bottled water that people drink and therefore consuming less fluoride. One change to our diet that few would dispute is an increase in sugar consumption, especially through soft drinks. In Australia, we must concede that despite widespread water fluoridation, tooth decay is still increasing. Diet and dental care are crucial elements in preventing tooth decay. Some research indicates that cheese has anti-decay properties, yet this is not being employed as another way of preventing tooth decay. [7] Dentists are well aware that daily flossing is crucial to preventing tooth decay, yet is poorly promoted in Australia. Dental hygienists, who educate patients on dental care, are in short supply in Australia, with no training facilities in NSW at all. If water fluoridation is relied upon as the effective tooth decay preventative, might this influence dentists as to how much they insist upon flossing and improving their diet to their patients? Would a national programme ensuring that everyone flosses their teeth daily improve dental health to a satisfactory level?

HEALTH RISKS

Hypothyroidism

What then, are the health risks of long-term water fluoridation? Research papers on this topic number in their thousands,

reaching back many decades. In this article, only a few of the health risks can be mentioned. One condition that I found striking was the effect of fluoride on the thyroid gland. The astoundingly abundant research, dating back to 1854, indicates that sodium fluoride causes goitre. [8], [9]. It seems that *fluorine* displaces *iodine.* Sodium fluoride has been used to treat hyperthyroidism since 1923, and was still being used in the late 1970's. Fluoride's antagonistic effect on iodine resulting in hypothyroidism is well known. **The effect of fluoride on the thyroid gland is so well known that some researchers have recommended iodine supplementation in fluoridated water areas.**

Osteoporosis

The next compelling health risk of fluoridation is that of osteoporosis. Fluoride affects dental enamel, and too much of it causes dental fluorosis, with tooth discolouration and pitting. *Dental fluorosis* is the precursor of *skeletal fluorosis,* where bones are affected. A review of recent scientific literature [10] reveals a consistent pattern of evidence showing the effect of fluoride on bone structure causing skeletal fluorosis, hip fractures and bone cancer.

Neurotoxic

Then there are the neurotoxic effects. Dr Phyllis Mullinex PhD worked at the Department of Neuropathology at the Harvard Med School between 1977 and 1982. In 1983 she helped to establish the first dental toxicology institution in the world at the Forsythe Dental Center in Boston, where she researched the effects of fluoride on the central nervous system. [11] Dr Mullenix's research raises the possibility of fluoride playing a part in the dramatic rise of children with autistic spectrum disorders, including ADD and ADHD. Other research repeatedly refers to fluoride allowing an increased absorption rate of lead and aluminium, commonly found in children with these disorders.

SCIENTIFIC EVIDENCE

Perhaps the most compelling evidence of associated risks with water fluoridation is the 2006 report from the committee of the National Research Council (2006) [12]: a 530-page scientific review of the United States Environmental Protection Agency's (EPA) Standards on fluoride in drinking water. The report concludes that that the EPA's drinking water standard for fluoride does not protect against adverse health effects. One would hope that those reassuring the public that there are no health risks associated with water fluoridation would at least familiarise themselves with this document.

In addition, some 1200 professionals from the Fluoride Action Network have signed a statement calling for an end to fluoridation worldwide. [13] This statement has been signed by many leading fluoride researchers around the world - a Nobel prize winner, 3 members of the 2006 National Research Council review panel, environmental writers and hundreds of doctors, dentists, PhDs, and other highly qualified people from over 40 countries. One must ask why such people would spend their valuable time supporting such an issue, when they have nothing to gain other than the satisfaction of seeing better health and safety resulting from their research.

Despite the arguments against water fluoridation in Australia, with Queensland poised to join the rest of the country, it is a reality for most Australians. Most countries in the world though, have rejected fluoridation. Only America, Australia, New Zealand, and countries that follow America's lead persist in the practice. Australian health authorities do not appear to have funded studies to examine the possible relationship between exposure to fluoride and any harmful effect on any tissue other than the teeth. Concerned health professionals have sent an open letter [14] to Queensland's Premier, Minister for Health, Councillors of all Cities and Shires and Brisbane's Lord Mayor and deputy, alerting them to the potential health risks of fluoridating their water supplies.

One Dentist Speaks Out

In spite of the well-documented human and environmental issues, the orthodox medical establishment persists in their support of fluoridating water supplies, as do most dentists. One dentist though, has moved from being an ardent supporter of water fluoridation, to an opponent of it. Dr John Colquhoun, a past Principle Dental Officer in Auckland New Zealand describes his experience in his article *"Why I Changed My Mind About Water Fluoridation"* [15] At first he learned only one side of the argument and was taught that there was really no scientific case against fluoridation and that "Only misinformed lay people and a few crackpot professionals were foolish enough to oppose it." He initially attributed the decline in dental decay to the introduction of fluoride in Auckland's water supply. [16] He was asked to lead a campaign to promote fluoridation in non-fluoridated parts of New Zealand. However, Dr Colquhoun also noted a decline of tooth decay in non-fluoridated areas, which may have resulted from the use of fluoride toothpastes, fluoride supplements, and from fluoride applications to the children's teeth in dental clinics, which had started at the same time as fluoridation. A world study tour visited only profluoridation research centers and scientists, but still he noted that internationally, tooth decay was also declining in areas without water fluoridation.

After being appointed chairman of a national "Fluoridation Promotion Committee", he saw virtually no difference in tooth decay rates between the fluoridated and non-fluoridated places. US surveys yielded similar results, as did Australia, Britain, Canada, Sri Lanka, Greece, Malta, Spain, Hungary, and India. He quotes a Professor Teotia in India examining the teeth of 400,000 children, finding that tooth decay ***increases*** as fluoride intake increases. ***They concluded that tooth decay is caused by calcium deficiency and an excess of fluoride.*** Further studies show that tooth decay had started to

decline well before the use of fluorides. He says that the influence of general nutrition to protect against tooth decay is largely ignored by fluoride enthusiasts, who insist that fluorides have been the main contributor to improved dental health. He asserts that studies that support water fluoridation are selected to the exclusion of others, by examiners who are keen fluoridationists. “It is just not possible to find a blind fluoridation study in which the fluoridated and non-fluoridated populations were similar and chosen randomly”.

He outlines other factors that might contribute to decreased dental decay. Molybdenum, had been discovered in some of the soil of one control city, making tooth decay levels there unusually low. [17] This finding is worth investigating as fluoride has been. Evidence strongly indicates that water fluoridation today is of little if any value - it is now widely conceded that the main action of fluoride on teeth is a *topical* one (at the surface of the teeth), so that there is negligible benefit from swallowing fluoride. [18]
Dr Colquhoun goes on to describe how he began to recognise the harmful effects of fluoride, from dental fluorosis, which ***does not occur in non-fluoridated areas.*** He quotes studies revealing associations between fluoridated water and hip fractures, when fluoride was used in an attempt to treat osteoporosis and it actually caused more hip fractures, because when fluoride accumulates in bones, it weakens them. “We have always known that only around half of any fluoride we swallow is excreted in our urine; the rest accumulates in our bones”[19] [20]
After researchers in Finland revealed high levels of fluoride in the bones of osteoporosis sufferers, Finland stopped fluoridation altogether. Other European countries have acted as Finland has in a similar way. Other harmful effects mentioned are bone cancers and lower intelligence in Chinese children with dental fluorosis.

UNDERSTANDING BOTH SIDES OF THE DEBATE

It is refreshing to read of this dentist who recognised that he had been influenced by selected literature and consequently broadened his focus to the massive amount of research that warns of the health damage that fluoride is probably already causing millions of people. Ordinary people who place their trust in the health authorities of their country deserve to benefit from the results of research that public money has funded. If anti fluoridationists are looking at only one side of the argument, which many may be, the side they are looking on is the one where the studies show that water fluoridation challenges human health on many levels. It is heeding this information that could help governments reduce far more than dental costs.

WHAT DO CONCERNED PEOPLE DO IF THEY WISH TO AVOID CONSUMING ADDITIONAL FLUORIDE?

- Consuming spring water, which will still contain a small amount of naturally occurring fluoride
- Filter tap water via reverse osmosis bone charcoal, contact precipitation or activated alumina
- Mothers in affected areas should be encouraged to breastfeed since breast milk is low in fluoride
- Make infant formulas up with bottled or adequately filtered water
- Modify tea drinking

Ways of preventing tooth decay are:

- Avoid sugar, or brush teeth immediately after eating sugary food
- Eat plenty of fruit and vegetables to make saliva alkaline (oral acidity contributes to tooth decay)
- Use an electric toothbrush to maximise the effectiveness of brushing
- Don’t snack between meals
- Use a fluoridated toothpaste
- Floss at least once daily – parents can easily perform this on young children using a Y shaped applicator
- Have regular dental care. Where available, consult a dental hygienist or holistic dentist
- Use xylitol (a sugar substitute) products, like chewing gum and mouthwash after eating [21]
- Eat molybdenum containing foods – mostly found in milk, legumes (beans, peas, lentils) and whole grains

References:

1. Stateline Interview with Dr Martin Dooland 20th July 2007 http://www.abc.net.au/stateline/sa/content/2006/s1985572.htm (Last accessed 30th December 2007)
2. Australian Institute of Health and Welfare: *Social determinants of oral health: conditions linked to socioeconomic inequalities in oral health in the Australian population* Published **17 December 2007**; ISSN 1449-2008; ISBN-13 978 1 74024 726 9; AIHW cat. no. POH 7; 148pp
3. http://bruha.com/pfpc/html/f-_in_food.html (Last accessed 29th December 2007)
4. Silva M, Reynolds EC - "Fluoride Content of Infant Formulae in Australia" Aust Dental Journal 41(1): 37-42 (1996)
5. "Chemical and Engineering News” 8th June 2006 http://pubs.acs.org/cen/coverstory/84/8423cover1.html (Last accessed 29th December 2007)
6. http://www.agf.gov.bc.ca/AHC/toxtest-aj.htm#fluoride (Last accessed 29th December 2007)
7. Herod, E.L. The effect of cheese on dental caries: A review of the literature. *Austral. Dental J.* 36 (2): 120-125, 1991.

8. List Of Similar Symptoms Of Fluoride Toxicity And Thyroid Dysfunction; http://bruha.com/pfpc/html/symptoms.html lists 171 research references. (Last accessed 29th December 2007)

9. History of the Fluoride/Iodine Antagonism. http://bruha.com/pfpc/html/thyroid_history.html lists over 120 research references. (Last accessed 29th December 2007)

10. Diesendorf M, et al., New evidence on fluoridation, *Aust NZ J Public Health*, 1997 Apr, 21(2), 187-190. http://www.fluoridation.com/abstract.htm (Last accessed 29th December 2007)

11. *Statement from Dr. Phyllis Mullenix on the Neurotoxicity of Fluoride* http://fluoridealert.org/pmullenix.htm (Last accessed 29th December 2007)

12. *Fluoride in Drinking Water: A Scientific Review of EPA's Standards* pp 530 2006 http://www.nap.edu/catalog.php?record_id=11571- read online (Last accessed 29th December 2007)

13. *Professionals Statement Calling for an End to Water Fluoridation* http://www.fluoridealert.org/statement.august.2007.html (Last accessed 29th December 2007)

14. http://www.fluoridealert.org/queensland-letter.pdf (Last accessed 30th December 2007)

15. *Perspectives in Biology and Medicine*, 41, 1, Autumn 1997 http://www.fluoridation.com/colquhoun.htm (Last accessed 31st December 2007)

16. Colquhoun, J. *The influence of social rank and fluoridation on dental treatment requirements*. N.Z. Dental J. 73:146-148, 1977.

17. Ludwig, T.G. *Recent marine soils and resistance to dental caries.* Austral. Dental J. 8:109-113, 1963.

18. *J. Dental Res.* 69 (Special Issue): 606-613, 742-750, 556-557, 1990.

19. *Fluorides and Human Health*. Geneva: World Health Organization, 1970. 37-41.

20. *Fluorine and Fluorides*. Geneva: World Health Organization, 1984. 152-153.

21. Kron, J *Holistic Dentistry* Journal of Complementary Medicine 2007 Vol 6 No 1: 42-47

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