

Fluoride Free New Zealand

1st February 2017

Clerk of the Health Select Committee: -

Submission on Health (Fluoridation of Drinking Water) Amendment Bill

We wish to appear before your committee to speak to this submission

Fluoride Free New Zealand (FFNZ) is a non-profit advocacy for public health. We are made up of thousands of ordinary New Zealanders including many health, science and legal professionals. Many of us have been researching fluoridation for over ten years. We formed officially in 2003 to advocate for the cessation of fluoridation of public water supplies on the basis that it is unsafe, ineffective and violates the individual's right to informed consent.

FFNZ opposes the new Bill because it is designed to increase fluoridation. Fluoridation should not be extended, it should be stopped because:

1. The science is not settled. Fluoride is now proven to be a neurotoxin and an endocrine disruptor with no established safe limit
2. Fluoridation overrides people's right to informed consent to medical treatment
3. The Ministry of Health reports that 40% of children are already getting too much fluoride. Therefore, the Government should be taking urgent steps to REDUCE fluoride exposure, not increase it.
4. It is well established that fluoride works on the tooth surface, not from incorporation into the tooth enamel
5. Latest study shows no difference in decay rates between fluoridated and nonfluoridated areas for the vast majority of New Zealand children
6. New Zealand data shows severe tooth decay experienced just as much in fluoridated areas
7. The Bill does not require consideration of total fluoride exposure as advised by the World Health Organisation
8. The Bill does not require any community consultation. Only 23 councils out of 67 have any fluoridation. Only three countries in the world have mandatory fluoridation.
9. The proposed changes are not cost effective
10. The public water supply should not be used to dispose of a class 6 poison, classified as hazardous, that would otherwise be subject to environmental laws

The Science is not settled

In 2015 the US Department of Health and Human Services reduced the recommended maximum level for fluoridation to 0.7ppm. The NZ MoH still recommends a range from 0.7ppm – 1ppm with a target of 0.85ppm. Obviously, their previous recommendation was wrong.

In 2012 a meta analysis of the 27 human studies on fluoride and its impact on the brain that existed then, was published in the Lancet. They found the average IQ drop was 7 points. (Note: the Gluckman-Skegg report incorrectly stated it was 1 IQ point but it was half a standard deviation - 7 IQ points).

In 2014, Harvard researchers published another study in the Lancet which classified fluoride as an “emerging neurotoxin” joining lead, methylmercury, polychlorinated biphenyls, arsenic, and toluene.

As at January 2017, there are now 50 human studies out of 57, and over 300 animal studies, that have found fluoride causes damage to the brain.

Because of the growing concern that the dose at which harm occurs is not known, the US Government is currently funding seven studies in an attempt to determine this.

Studies currently being undertaken:

- 1.** A National Institute of Health (NIH) funded fluoride-brain study will allow York University to lead the largest study to date, that investigates whether early life exposure to low level fluoride affects the developing brain.
- 2.** A new rodent study that the National Toxicology Program (NTP) is in the process of completing, using low levels of fluoride exposure.
- 3.** A National Institute of Environmental Health Studies (NIEHS) on fluoride neurotoxicity will look at: (1) an examination of the cognitive effects from fluoride in drinking water, (2) estimating the global burden of disease of mild mental retardation associated with environmental fluoride exposure, and (3) investigating the impact of in-utero exposure to fluoride (via drinking water) on cognitive development delay in children. The leading researcher will also exam the impact of fluoride on thyroid hormone levels in pregnant women.
- 4.** Dr. Philippe Grandjean (Harvard School of Public Health) is leading an ongoing study of fluoride and intelligence among a group of schoolchildren in China.
- 5.** An NIEHS-funded human epidemiological study, titled “Prenatal and Childhood Exposure to Fluoride and Neurodevelopment”, is investigating the relationship between fluoride and IQ among a cohort of children in Mexico.
- 6.** An NIEHS-funded animal study, titled “Effects of Fluoride on Behaviour in Genetically Diverse Mouse Models”, is investigating fluoride’s effects on behaviour and whether these effects differ based on the genetic strain of the mouse.

7. The NIH is funding a study investigating the impact of fluoride on the timing of puberty among children in Mexico. This study is pertinent to the assessment of fluoride's impact on the pineal gland's regulation of melatonin.

The Dunedin IQ study by Broadbent et al

In 2014 Broadbent et al published a study based on data collected in the Dunedin Multidisciplinary study. The study claimed there was no difference in IQ between the fluoridated and non-fluoridated children in Dunedin/Mosgiel. However, there were 891 children in the fluoridated area and only 99 children in non-fluoridated area. As Dr Broadbent has had to admit, 53 of the so-called non-fluoridated children were actually taking fluoride tablets. Consuming fluoridated tablets gives a child a dose similar to what a child would get from drinking fluoridated water.

Therefore, there were only 46 children in the whole study that were not being given extra fluoride. Dr Broadbent's excuse for not including this figure in his published research was that he was looking at fluoridation rather than fluoride intake. The most obvious confounding factor was excluded.

Fluoridation denies the right to informed consent

Since fluoride works on the outside of the tooth and people can take fluoride tablets if they choose, the only reason to add fluoridation chemicals to the public water supply is to attempt to force it onto people. The fact that some people think they have the right to put a substance into someone's drinking water to medicate them and their children shows an underlying disrespect for others.

It is illegal to add drugs, medication or even supplements to another person's drink without informed consent. It is illogical think it is perfectly alright to do so if it is via the public water supply.

"Any preventive, diagnostic and therapeutic medical intervention is only to be carried out with the prior, free and informed consent of the person concerned, based on adequate information. The consent should, where appropriate, be express and may be withdrawn by the person concerned at any time and for any reason without disadvantage or prejudice." – UNESCO on Bioethics and Human Rights (2005).

"In no case should a collective community agreement or the consent of a community leader or other authority substitute for an individual's informed consent." - Informed Consent in UNESCO documents on Bioethics and Human Rights, Article 6 (2010).

40% of children already getting too much

The Ministry of Health's 2009 Oral Health Survey found 40% of children in both fluoridated and non-fluoridated areas have some form of dental fluorosis. Other New Zealand studies¹ found 15% in nonfluoridated areas and 30% in fluoridated areas.

Dental fluorosis is caused by an excess of fluoride as the teeth are developing. Most dental fluorosis in New Zealand is very mild or mild although the 2009 Oral Health survey reports 2% of children have moderate dental fluorosis.

As noted by Dr Hardy Limeback "it is illogical to assume that tooth enamel is the only tissue affected by low daily doses of fluoride ingestion." According to the late Dr. John Colquhoun, "Common sense should tell us that if a poison circulating in a child's body can damage the tooth-forming cells, then other harm also is likely." If a child has a thin blue line on their gum (Burton's Line) it represents over-exposure to lead or another heavy metal. No one would say it is "only cosmetic".

Very Mild



Moderate



17 yr old Wellington boy
cancer survivor

Moderate



12 y old Lower Hutt girl
with Crohn's disease

None of the Governments in countries that have fluoridation have done any research into what other effects may have been experienced by children with dental fluorosis. There are only three studies from India, China and Mexico that have looked at dental fluorosis and other adverse health effects. They all found a strong correlation with any level of dental fluorosis to reduced IQ.

1. A) Enamel defects and dental caries in 9-year-old children living in fluoridated and nonfluoridated areas of Auckland, New Zealand. *Community Dent Oral Epidemiol.* 2009 Jun;37(3):250-9. doi: 10.1111/j.1600-0528.2009.00465.x. Epub 2009 Mar 19

B) Prevalence of enamel defects and dental caries among 9-year-old Auckland children. Schuller PJ, Kanagaratnam S, Durward CS, Mahood R *NZ Dental Journal* December 2008 (p145-152)

C) Enamel defects and dental caries among Southland children
Mackay T D, Thomson W M, *NZ Dental Journal* 101, No. 2, June 2005 (p35-43)

Fluoride works on the OUTSIDE of the tooth

Fluoridation was based on the theory that fluoride needed to be incorporated into the tooth enamel as a child was growing to make the enamel more resistant to decay. However, advocates have now largely accepted this theory was wrong.

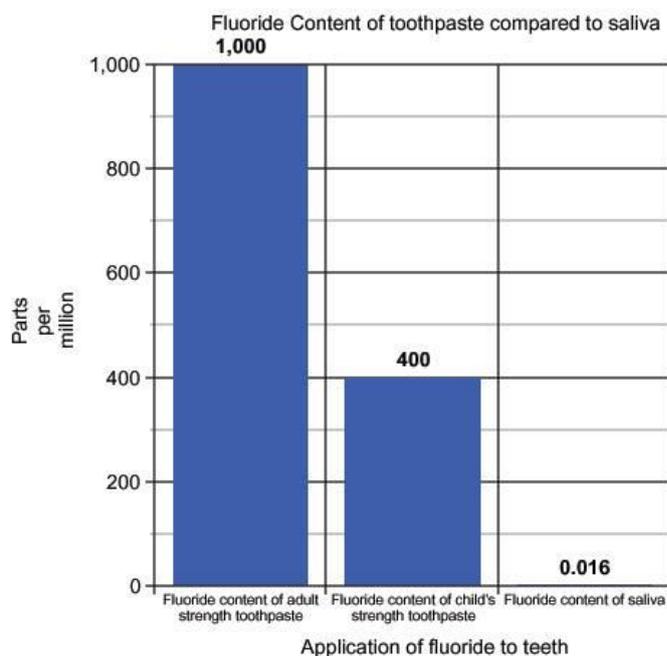
Featherstone is one of the world's leading authorities on fluoride and fluoridation. His research² published in the Centers for Disease Control's Morbidity and Mortality in 1999 was a watershed moment for fluoridation as it then became "official" that fluoride does not work by being swallowed.

Dr Whyman, consultant for the now defunct National Fluoridation Information Service, and one of New Zealand's leading fluoridation promoters states, "It is generally accepted that the principal caries protective effect from fluoride is topical".

In Hamilton in 2013, he explained a new theory to justify fluoridation. He said that when fluoride is swallowed, it is stored in the bones and soft tissue. It is then released during the day into the blood stream and eventually secreted by the salivary glands, providing a topical benefit to the tooth surface.

But simple maths shows this new theory does not hold water any more than the older disproven theory, as the amount of fluoride required for topical benefit is much higher than that secreted from the salivary glands.

The Ministry of Health advises that children should brush their teeth with adult strength toothpaste containing fluoride of 1,000 parts per million (ppm) rather than the child strength toothpaste, which only has 400ppm. They say that 400ppm is not strong enough to provide a benefit. Yet fluoridated water only contains 0.85ppm and the amount secreted into the salivary glands is only 0.016ppm.



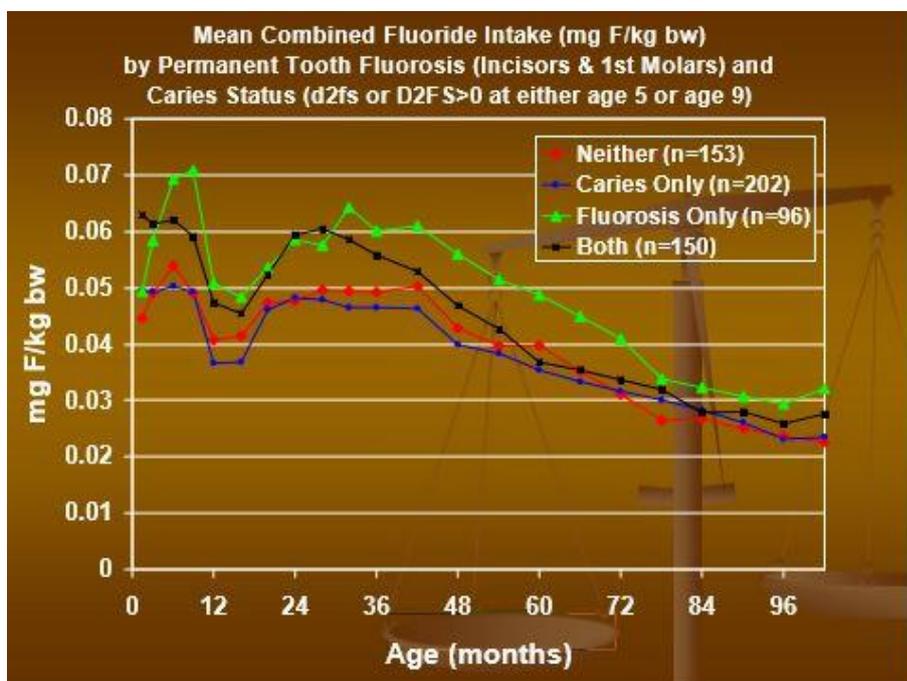
² <http://www.cdc.gov/mmwr/pdf/rr/rr5014.pdf>

This doesn't add up. If 400ppm child strength is not strong enough to provide a benefit, how can the 0.016ppm that is secreted from the salivary glands provide a benefit? 0.016ppm is approximately 62,500 times less fluoride than 1,000ppm in adult strength toothpaste. You don't need to be a scientist to realise that this is not a credible theory, you just need to use common sense. Remember, they were wrong about the previous theory.

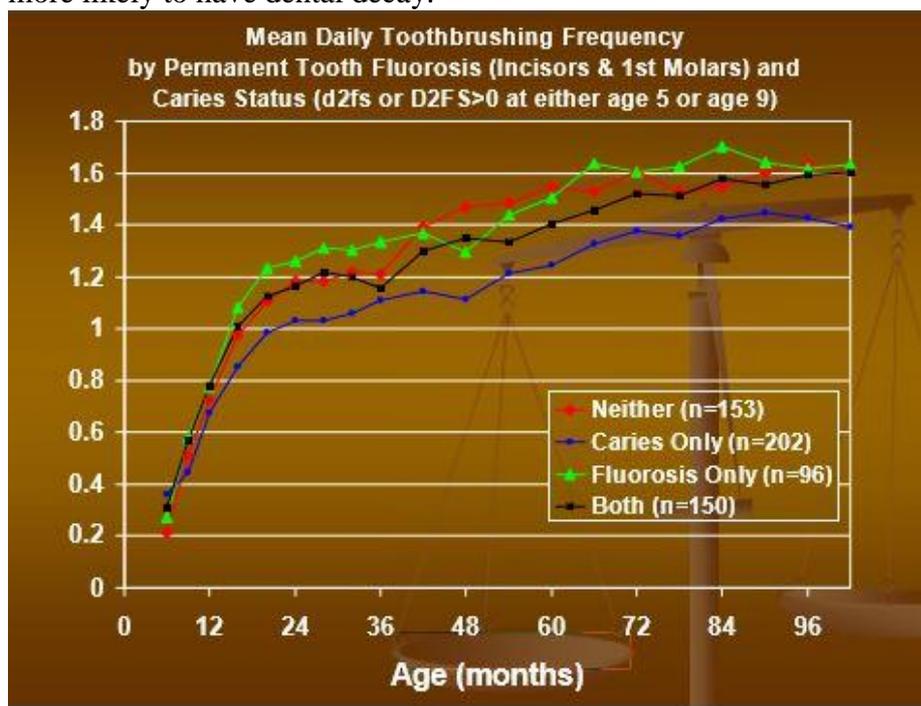
The Iowa Longitudinal study by Levy et al

A large scale longitudinal study from Iowa has consisted of monitoring a group of individuals from birth, in relation to their fluoride exposure. They published data in 2008 proving that fluoride ingestion is not related to dental decay rates.

Graph 1. Children with dental fluorosis, with or without cavities, had been exposed to higher levels of fluoride than children without dental fluorosis. Children with no dental decay, had practically the same amount of fluoride as those experiencing decay only.



Graph 2. Children who brushed their teeth less, were less likely to have dental fluorosis and more likely to have dental decay.



Graph 3. Children who consumed more sugared drinks were more likely to have dental fluorosis and more likely to have dental decay.



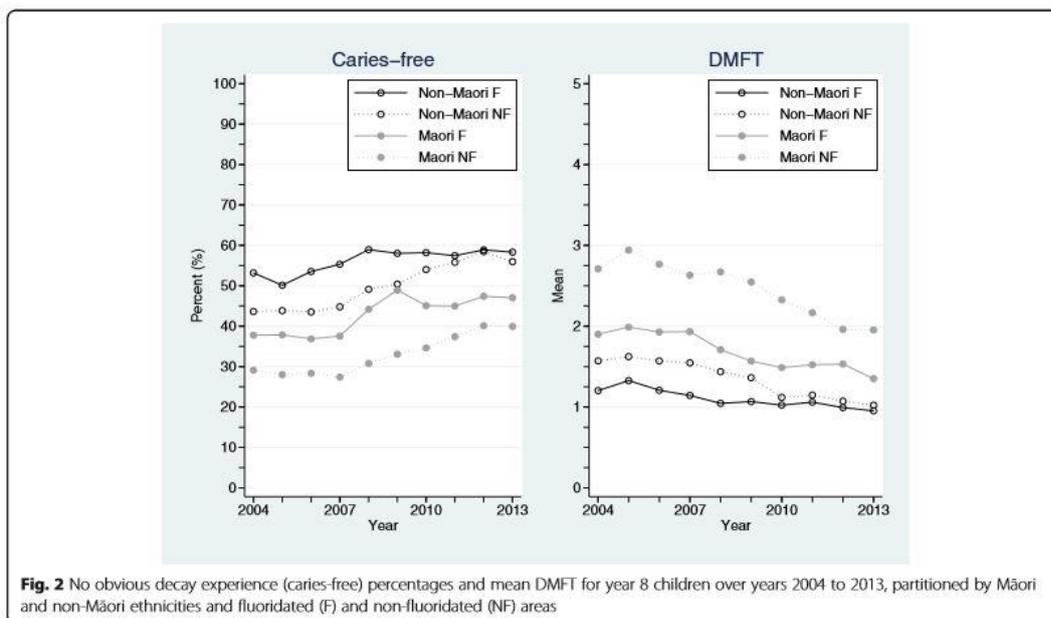
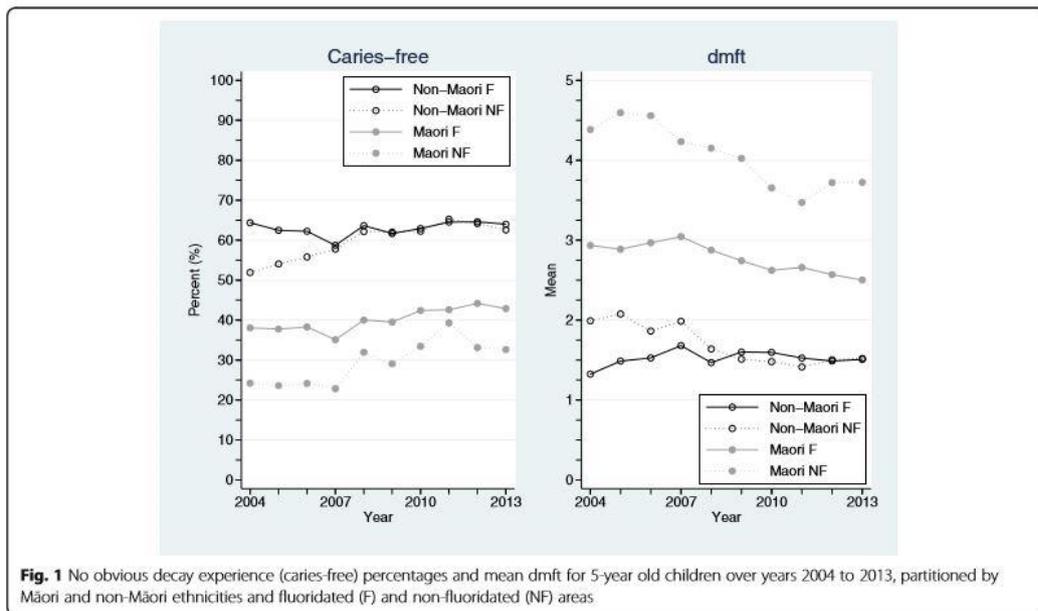
CONCLUSION “Given the overlap among caries/fluorosis groups in mean fluoride intake and extreme variability in individual fluoride intakes, firmly recommending an “optimal” fluoride intake is problematic”³.

³ <https://www.ncbi.nlm.nih.gov/pubmed/19054310>

Latest NZ Study shows no difference in decay rates

The study published last year by well-known pro-fluoridation dentists Schluter and Lee, had to admit that there was no difference for non-Maori children between fluoridated and non-fluoridated areas. They found there was no difference for European children, Asian children or Pacific Island children. The only difference that remains is between Maori children in fluoridated compared to non-fluoridated areas.

This difference is likely to be largely because the fluoridated areas are made up of big cities such as Wellington which has the highest socio-demographics and the non-fluoridated areas have the poorest areas such as Northland. This skews the results in favour of fluoridation.



The Ministry of Health, and Sapere, are relying on data from the 2009 Oral Health Survey which indicates New Zealand children and adolescents living in fluoridated areas had, on average, 40 percent less tooth decay than their peers living in non-fluoridated areas.

However, apart from the fact that this data is now nearly eight years old, they said, “It is important to note that it was not one of the objectives of the 2009 NZOHS to compare the oral health status of people by fluoridation status, and therefore the survey cannot be considered a fluoridation study as such. The following results are for a snapshot in time, and constitute an ecological analysis based on current place of residence. As such, they do not take into consideration lifetime exposure to fluoridated and non-fluoridated water supplies. Individuals who currently live in fluoridated areas may have spent time in non-fluoridated areas, and the reverse is also true. Furthermore, there may be other confounding factors that have not been taken into account in this analysis, such as the usual reason for visiting a dental professional, and other sources of fluoride such as fluoride toothpaste”⁴

Even though the survey adjusted for age, sex, ethnicity and NZDep2006 there were not many children in each age group.

Age Group	Number dentally examined	Avg number children for each age
2 – 4 years	195	65
5 – 11 years	438	62
12 – 17 years	354	59

Without knowing lifetime exposure, it is therefore more reliable to look at the NZ School Dental Statistics which have around 45,000 children in the Age 5 and Year 8 (12-13 year olds). As shown earlier there is now no discernible difference in children’s decay rates between fluoridated and nonfluoridated areas.

Three studies prior to the Oral Health Survey (Kanagarathnum 2009⁵, Shluter 2008⁶ and Mckay 2005⁷) accounted for lifetime exposure. They found no major difference in decay rates between fluoridated and nonfluoridated areas.

For example, Schluter et al report for deciduous teeth, “While mean dmfs scores were lower in fluoridated areas than in non-fluoridated areas, no statistically significant difference was observed” and permanent teeth, “There were no significant differences between fluoridated and non-fluoridated areas in caries prevalence or severity”
 All found a doubling of dental fluorosis – approximately 15% in nonfluoridated areas and 30% in fluoridated. The Oral Health Survey found 40% of children with some form of dental fluorosis (2% with moderate fluorosis) although they did not find a difference between fluoridated and nonfluoridated areas.

Kanagarathnum concludes, “Guidelines and health-promotion strategies that enable children to minimize their risk to diffuse opacities [dental fluorosis] yet reduce their risk of dental caries should be reviewed.”

⁴ <http://www.health.govt.nz/publication/our-oral-health-key-findings-2009-new-zealand-oral-health-survey>
 page 167

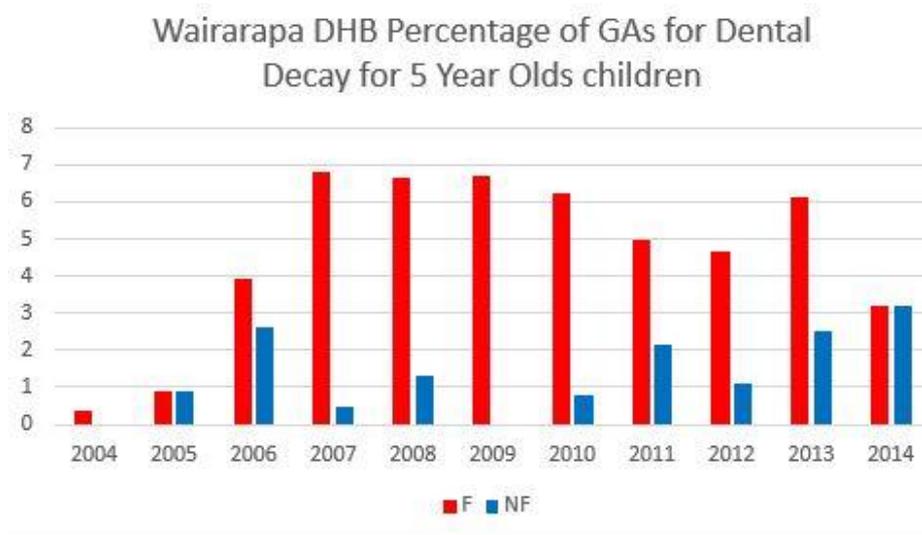
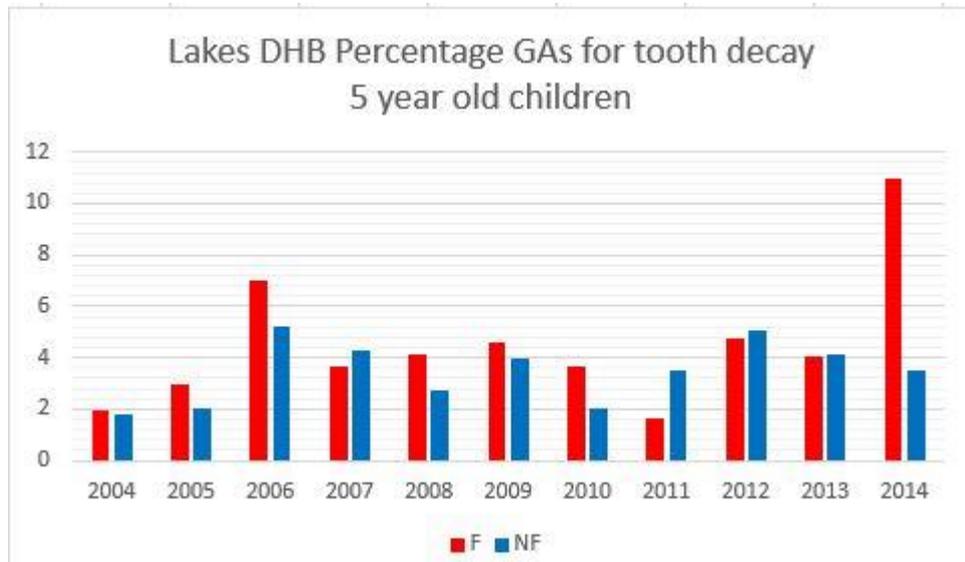
⁵ <https://www.ncbi.nlm.nih.gov/pubmed/19302574>

⁶ [NZ Dental Journal December 2008 \(p145-152\)](#)

⁷ *NZ Dental Journal* 101, No. 2, June 2005 (p35-43)

New Zealand data shows severe tooth decay experienced just as much in fluoridated areas

Data received under Official Information Act has found that children living in the fluoridated areas require general anaesthetics for severe dental decay at an often-greater rate than children in non-fluoridated areas.



The Cochrane Collaboration published a comprehensive review of the effectiveness of fluoridation in 2015. They stated in their results “There is insufficient information to determine whether initiation of a fluoridation programme results in a change in disparities across socioeconomic (SES) levels”.

The Bill does not require consideration of total fluoride exposure as advised by the World Health Organisation

The World Health Organisation has repeatedly advised that dose of fluoride needs to be examined rather than concentration of fluoride in the water.

"At higher levels of ingestion - from 2 to 8 mg daily, skeletal fluorosis may arise ... Whereas dental fluorosis is easily recognized, the skeletal involvement is not clinically obvious until the advanced stage of crippling fluorosis ... early cases may be misdiagnosed as rheumatoid or osteoarthritis." - World Health Organization. (1970). Fluorides and Human Health. pp 32, 239-240.

"In the assessment of the safety of a water supply with respect to the fluoride concentration, the total daily intake by the individual must be considered." – World Health Organisation. International Drinking Water Standards, 3rd Ed., 1971.

"Dental public health administrators should be aware of the total fluoride exposure in the population before introducing any additional fluoride programme for caries prevention." – World Health Organization. Fluorides and Oral Health. WHO Technical Report Series 846, 1994.

“The effects of fluoride are best predicted by the dose (i.e. mg fluoride per kg of body weight per day), the duration of exposure and other factors such as age (e.g. dental fluorosis). However, most epidemiological studies concerning the effects of fluoride on teeth and bone have correlated the effects with the concentration of fluoride in the drinking-water (mg l⁻¹ fluoride) consumed rather than total fluoride exposure.” WHO fluoride in Drinking Water 2006.

The Bill does not require any community consultation

The Bill is designed to remove input from the community. The Regulatory Impact Statement says that under the preferred option, Option 4 “there would be less consultation on the community’s preferences about fluoridating the water-supply, or about their views on the merits of fluoridation”.

Fluoridation was first started in Hastings in 1953 with New Zealand being the second country in the world to implement it. Other towns and cities mostly started in the 1960s. Over the past 15 years a number of places have stopped fluoridation, with now only 23 councils out of 67 continuing. Dental decay rates have continued to decline all over New Zealand including those places that stopped fluoridation.

The dictatorial nature of this Bill is abhorrent to most New Zealanders. Most of the world does not have fluoridation chemicals forced on them via the public water supply. Only three other countries in the entire world have legislation for mandatory nationwide fluoridation: Ireland, Singapore and Israel - although in Israel there is currently no fluoridation since it was stopped in 2014 by the then Minister of Health.

Taking away the last vestige of input the community people have into their own drinking water, is extremely dictatorial.

The proposed changes are not cost effective. The Bill diverts more money into a failed programme when there are good alternatives that work, cost less and do not infringe on peoples’ rights

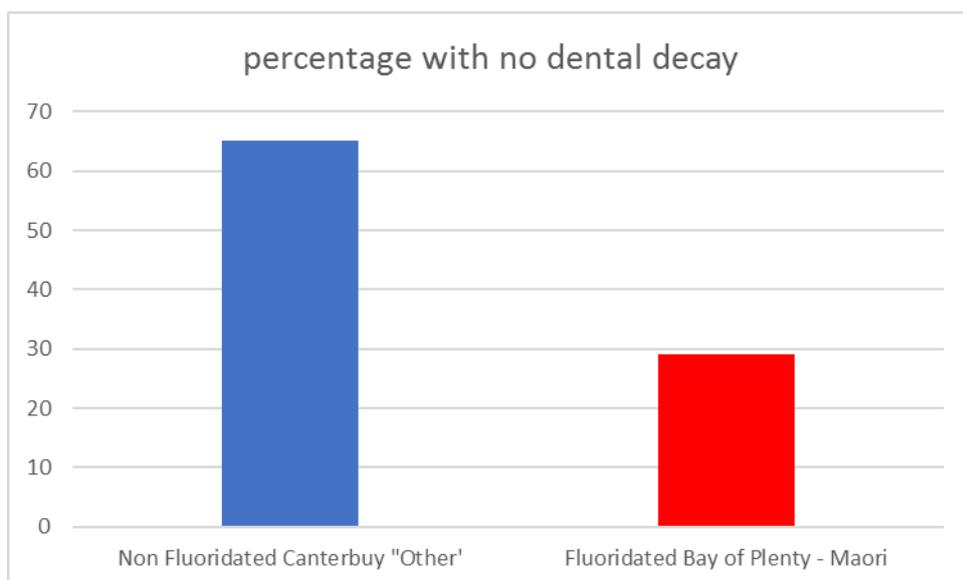
Last year, the Wellington based Sapere Group were commissioned to estimate cost-effectiveness. Unfortunately, they based benefits of reduction on decay rates on the 2009 Oral Health Survey which was not designed for that purpose because of small sample size and unknown life-time exposure. It is also out of date. They estimated fluoridation would cost \$177,000,000. This money would be far better spent on helping children with severe decay.

A programme based on the Scottish CHILDSMILE that includes supervised tooth brushing in schools could provide vast benefits. The CHILDSMILE programme has resulted in dramatic improvement in oral health. Scottish children now have better dental health than New Zealand children, and the number of anaesthetics for severe tooth decay has been halved. According to the Scottish Public Health Minister, Maureen Watt, this is saving 5M pound per year. She also says, “This is a really tremendous example of spending to save.”

School tooth-brushing schemes can be targeted to areas of high deprivation so that improvements in oral health can be made across the board. Children in fluoridated areas are still suffering from severe dental decay so these children need programmes to help them. In-school programmes mean toothbrushes and toothpaste actually get used and children are taught a life-time skill.

The latest data from the School Dental Statistics shows non-Maori, non-Pacific Island children are experiencing unprecedented low rates of decay, with between 60 - 80% of 5 year old children without any dental decay and an average of only 1.36 fillings.

In nonfluoridated Canterbury, over 65% of non-Maori, non-Pacific Island 5 year olds and Year 8 children are free of dental decay, whereas only 29% of Maori 5 year olds and Maori Year 8 children in fluoridated Bay of Plenty are free of decay.



The Ministry of Health reports that, “children in high deprivation areas, are also likely to have significantly lower levels of: newborn enrolment with primary care services; contact

with Well Child services; enrolment with child oral health services; and completion of the B4 School Check.” As children in high deprivation areas are more likely to suffer from dental decay, this suggests that these programmes are important in improving dental health and more should be done to ensure children are enrolled in these services.

A recent article in the Southland Times, “The Decile 1 School that Quit Sugar and Improved its Pupils Teeth,” shows what can be done by a simple rule, that costs no money or requires any extra resources to implement.

“In 2007, decile 1 Yendarra School in South Auckland adopted a 'water only' policy for drinks and asked parents to provide healthy lunches made up of salads, sandwiches, fruit, water and milk. Over seven years the average number of cavities dropped 'significantly' and the number of extractions due to decay halved, according to a study by Auckland Regional Public Health Service.

"Sugar is the most important determinant of rotten teeth," lead author Dr Simon Thornley of Auckland Regional Public Health Service said.”

Simple strategies like this water-only policy could easily be implemented at no cost.

Fluoridation involves the addition of hazardous chemicals to the public water supply

Production of SiF₄ (Silicon Tetrafluoride).

The superphosphate production process results in the evolution of carbon dioxide, steam and SiF₄. This SiF₄ is an environmental pollutant and so is removed from the gas stream and used to produce fluorosilicic acid. It is removed by contacting the gas with water droplets. This water hydrolyses the SiF₄ as follows: $3\text{SiF}_4 + 2\text{H}_2\text{O} \rightarrow 2\text{H}_2\text{SiF}_6 + \text{SiO}_2$ The resultant hydrofluorosilicic acid (H₂SiF₆) is used for fluoridating drinking water.

Material Safety Data Sheets state that hydrofluorosilicic acid and sodium silico fluoride are class 8 poisons. They also state “Ecotoxicity: Avoid contaminating waterways” and “Disposal methods: Refer to Waste Management Authority. Dispose of material through a licensed waste contractor. Decontamination and destruction of containers should be considered”

Most hydrofluorosilicic acid and sodium silico fluoride is sourced within New Zealand and originates from the phosphate fertiliser industry e.g. Ravens Down. However, Greater Wellington Regional Council (GWRC) has sourced its fluoridation chemicals from Belgium in the past, and Invercargill currently gets its chemicals from China (both of these countries have banned fluoridation).

In a Tender document from DC Rosser to GWRC in 2009, Rosser claimed their chemical was better than the Chinese supply that the Invercargill Council was using, because “Chinese SSF supply that included caking, yellow discolouration, metal springs, plastic and cardboard in supplied product that frequently blocked their feed mechanisms.”⁸

This is an analysis of a batch of **FLUORIDATION CHEMICALS** added to Hamilton water in 2015, requested by Hamilton City Council. Information received under the *Official Information Act*.

Fluorosilicic Acid: Aluminium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iodine, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Phosphorus, Selenium, Silver, Thallium, Tin, **Uranium**, Zinc.

Does it concern you that this is added to YOUR drinking water?

R.J Hill Laboratories Limited
 1 Clyde Street
 Private Bag 3202
 Hamilton 3240, New Zealand

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REPORT

Sample Type: Fluorosilicic Acid
 Sample Name: HFA Batch # 2015107M 21-Apr-2015
 Lab Number: 1415879.1

Fluorosilicic Acid	Specifications
Apparent Hazen Colour: Hazen units	70
Turbidity: NTU	0.65
Fluorosilicic acid (H ₂ SiF ₆): %	22.4
Free Acidity (as HF): %	0.13
Total Suspended Solids: g/l ²⁰	< 60
Specific Gravity: 20°C/20°C	1.21
Aluminium: mg/kg as road	22
Antimony: mg/kg as road	< 0.09
Arsenic: mg/kg as road	3.2
Barium: mg/kg as road	1.06
Beryllium: mg/kg as road	< 0.05
Cadmium: mg/kg as road	0.06
Chromium: mg/kg as road	1.2
Copper: mg/kg as road	0.3
Iodine: mg/kg as road	43
Iron: mg/kg as road	41
Lead: mg/kg as road	0.06
Manganese: mg/kg as road	0.9
Mercury: mg/kg as road	< 0.05
Molybdenum: mg/kg as road	< 0.29
Nickel: mg/kg as road	1.0
Phosphorus: mg/kg as road	690
Selenium: mg/kg as road	< 0.5
Silver: mg/kg as road	< 0.05
Thallium: mg/kg as road	< 0.23
Tin: mg/kg as road	< 0.3
Uranium: mg/kg as road	0.52
Zinc: mg/kg as road	1.7

The Specification limits were supplied by the customer.

SUMMARY OF METHODS

The following table gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those alternative detection limits may be applied to individual samples on availability, or if the matrix requires that detection be performed during analysis.

Sample Type: Fluorosilicic Acid

Test	Method Description	Default Detection

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⁸ Appendix 1 – DC Rosser tender document

Questions for Select Committee Members:

- 1: What will you do if any of the fluoride-brain studies find that the levels of fluoride used to fluoridate New Zealand waters may be damaging children's brains?
- 2: How does adding the industrial form of fluoride to the public water supply, which you know will be used to make up infant formula, differ from adding pharmaceutical grade fluoride tablets to a baby's bottle without the informed consent of the parent?
- 3: Since it is obvious that a very large portion of children, including those in currently nonfluoridated areas, are already getting too much fluoride, what proof is there that they need more?
- 4: Since the level of fluoride produced in saliva from ingesting fluoride does not reach a level that can affect the tooth surface, what facts (not endorsements) are you relying on to advocate adding it to the drinking water?
- 5: Wouldn't it be better to spend this money on the children who are at risk of severe tooth decay rather than all the children in nonfluoridated areas with no dental decay plus all the adults who don't need help either?
- 6: What steps will the District Health Boards be required to take to ascertain total fluoride exposure?
- 7: What other chemicals/medications would you allow to be added to the public water supply, that are not required to make the water safe?
- 8: Why would you not direct District Health Boards to implement proven strategies such as CHILDSMILE or NEXO instead of a highly controversial and unpopular method that is not helping those most in need?
- 9: Will all the fluoridation chemicals be sourced from New Zealand phosphate fertiliser industries or will they be imported from places like China?

Contact Details

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027 361 5951

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| Appendix 1 | Tender document from DC Rosser |
| Appendix 2 | Orica Material Safety Data Sheet |
| Appendix 3 | International Critique of the New Zealand Gluckman-Skegg Report |