

Fluoridation

August 26, 2024

TCC Ordinary Council Meeting.

Presentation of Report: Fluoridation of Tauranga city's water supply. File Number: A16415420

Council vote on: Fluoridation of Tauranga's water supply.

5 minute presentation by Jodie Bruning, lead researcher PSGR

PSGR

Physicians & Scientists for Global Responsibility

Fluoridation

Is the Director-General misleading officials?

Does the new Health Act (1956) s116 contradict other relevant legislation, required to be considered by you, as a territorial authority, so as to protect public health?

Can you pause capital works without financial penalty?

PSGR

Physicians & Scientists for Global Responsibility

Jodie Bruning, lead researcher PSGR

Q.1

Is it appropriate that NZ's 'gold standard' for the safety of fluoride is established by a politically-timed review from the OPMCSA?

Risk assessment:

*Not a departure from the science –
but being true to science.*

OPMCSA 2014

Expert Panel Members

Charles Eason, PhD, MIBiol
CEO Cawthron Institute; Professor, Faculty of Agriculture and Forestry, University of
Christchurch, NZ

J. Mark Elwood, DSc, MD, MBA, SM, MB, BSc; FRCPC, FAFPHM
Professor, Epidemiology & Biostatistics, School of Population and Global Health,
Auckland, NZ

Gregory Seymour, BDS, MDSc, PhD, FRCPath, FFOP(RCPA), FRACD
Professor, Faculty of Medicine and Biomedical Sciences, University of Queensland,
Australia; Former Dean, Faculty of Dentistry, University of Queensland,
Australia

W. Murray Thomson, BSc, BDS, MA, MComDent, PhD
Professor, Dental Epidemiology and Public Health, Faculty of Health Sciences,
Dunedin, NZ

Nick Wilson, MB ChB, DIH, MPH
Associate Professor, Department of Public Health; Co-Director, Centre for
Equity and Cost Effectiveness (BODE³) Programme, University of Otago

Panel Lay Observer

Kerry L. Prendergast, CNZM
Chair, Environmental Protection Authority, and former Mayor of Christchurch

New Zealand reviewer

Wayne Temple, BSc(Hons), PhD, FNZIC, CChem, FRSC, MAACT
Director, National Poisons Centre, University of Otago, Dunedin

International reviewers

Professor David Coggon, OBE, MA, PhD, DM, FRCP, FFOM, FFPH, FRCR
Professor Occupational and Environmental Medicine, University of Liverpool

Professor Mark W.J. Ferguson, CBE, BDS, BSc, PhD, DMedSc, FFD
Director General, Science Foundation Ireland; Chief Scientist, Health Protection
Ireland, Dublin, Ireland

Laureate Professor Eric Reynolds, AO, BSc, PhD
Head, Melbourne Dental School; Associate Dean, Faculty of Dentistry,
Sciences, University of Melbourne; CEO, Oral Health Centre of Excellence,
VIC, Australia

OPMCSA 2021

Printable version of webpage: <https://www.pmcsa.ac.nz/topics/fluoridation-an-update-on-evidence/>

Peer reviewers

We extend our thanks to our peer reviewers for providing comment and feedback on draft materials.

- **Dr Anne Bardsley.** Deputy Director, Koi Tū: Centre for Informed Futures, main writer of 2014 Royal Society Te Apārangi fluoride review.
- **Associate Professor Jonathan Broadbent.** Longitudinal dental health research, Dental Public Health, University of Otago.
- **Dr Riana Clarke.** National Clinical Director Oral Health. Dentist. Ministry of Health.
- **Peter Cressey.** Senior Scientist at ESR.
- **Belinda Cridge.** Mechanistic toxicologist. Technical Lead, Drinking Water at ESR. University of Otago
- **Professor Mark J Ferguson.** Director General and Chief Scientific Adviser to the Government of Ireland, Science Foundation Ireland.
- **Dr Sabine Guth.** Dr. rer. nat. DFG-Senate Commission on Food Safety (DFG-SKLM) Scientific Officer, Leibniz Research Centre, Germany.
- **Professor Jan Hengstler.** Head of Department, Toxicology, Leibniz Research Centre (IfADo), Leibniz Research Centre, Germany
- **Dr Tule Fanakava Misa.** Public health dentist, President NZ Society of Hospital and Community Dentistry, CDHB.
- **Professor Sir David Skegg.** Emeritus Professor, Epidemiology and public health, author of 2014 Royal Society Te Apārangi fluoride review, University of Otago
- **Dr Moira Smith.** BDS PhD PGDipSci DPH. Senior Research Fellow and Senior Lecturer, Co-Director HePPRU: Health Promotion and Policy Research Unit, Department of Public Health, University of Otago.
- **Dr Justin Wall** BDS, DPH, Dip.Clin.Dent. Chair, Māori Oral Health Quality Improvement Group.

Archives of Toxicology (2020) 94:1375–1415
<https://doi.org/10.1007/s00204-020-02725-2>

REVIEW ARTICLE

Toxicity of fluoride: critical evaluation of evidence for developmental neurotoxicity in epidemiological studies, experiments and in vitro analyses

Sabine Guth¹ · Stephanie Hüser¹ · Angelika Roth¹ · Gisela Degen¹ · Patrick Diel² · Gerhard Eisenbrand³ · Karl-Heinz Engel⁴ · Bernd Epe⁵ · Tilman Grune⁶ · Volker Heberich⁷ · Hans-Ulrich Humpf⁹ · Henry Jäger¹⁰ · Hans-Georg Joost¹¹ · Sabine E. Kulling¹² · Almut Kuster¹³ · Rosemarie Marchan¹ · Doris Marko¹⁵ · Eva Mühle¹ · Michael A. Nitsche^{16,17} · Elke Pöschel¹⁸ · Christoph van Thriel¹ · Stefan Vieths²⁰ · Rudi F. Vogel²¹ · Edmund Wascher²² · Carsten Wagner²³ · Jan G. Hengstler¹

Received: 27 January 2020 / Accepted: 26 March 2020 / Published online: 8 May 2020
© The Author(s) 2020

OPMCSA review. Gold standard?

1. Politically timed in 2021 - 1 day after Supp Order paper 38 released.
 2. Prime Minister's office.
 3. 2014/2021 -No methodology, peer review panel oral/dental health.
 4. No: endocrinologists, toxicologists, impartial epidemiologists.
- D-G science?: OPMCSA reviews & Cochrane study (2015) Fluorosis.
 - ✓ Medicines Act - Medical therapeutic – safety & efficacy. Full compound.
 - ✓ Health Act – Purpose 'health'
 - ✓ HSNO Act – Purpose 'health' no risk assessment. 40+ years emissions.

Q.2

Is it appropriate that **risk assessment** to judge **pre-existing exposures** in infants and children & **risk from fluoride dosed into water**, by **developmental stage & bodyweight** has not occurred in New Zealand?

Joseph on Constitutional and Administrative Law (5th Edition)

10.8 Obedience to convention

Every primary rule of obligation, including conventions, risks being flouted from time to time. Politicians will be guided by their political instincts and may weigh up the advantages of breaching a convention and risk the political consequences.

Politicians may seek refuge in the uncertainty of conventional rules and stand their ground. It may be disputed whether a convention exists, or what obligation it prescribes, or whether an agreed convention is applicable.

23.2.3

The duty to weigh mandatory statutory considerations extends to facts so relevant that Parliament would have intended them to be taken into account.⁸⁹

Decision-makers cannot accord appropriate weight to contesting considerations without being in receipt of the relevant facts.

Health (Fluoridation of Drinking Water) Amendment Bill

Government Bill

As reported from the Health Committee

Commentary

Recommendation

The Health Committee has examined the Health (Fluoridation of Drinking Water) Amendment Bill and recommends that it be passed with the amendments shown.

Introduction

The bill seeks to amend Part 2A of the Health Act 1956 by empowering district health boards (DHBs) to decide and then direct territorial authorities to fluoridate or not fluoridate drinking water supplies in their areas. Territorial authorities currently make this decision. This has resulted in inconsistent decisions about fluoridation throughout New Zealand.

About 54 percent of the New Zealand population receives fluoridated water. This level has not increased in the past 15 years. Giving DHBs the power to direct territorial

**2016/17 Select Committee:
Concern about the safety &
efficacy of water
fluoridation beyond the
subject matter of the bill.**

**2021 Committee Report:
Views about fluoridation not
commented on – bill already
through full select
committee process.**



Inquiry into Supplementary Order Paper No. 38 on the Health (Fluoridation of Drinking Water) Amendment Bill

Report of the Health Committee

August 2021

Contents

Recommendation	2
Background to our inquiry	2

Health (Fluoridation of Drinking Water) Amendment Bill

2

This commentary covers the main amendments that we recommend to the bill. It does not discuss minor, technical, or consequential amendments.

Submissions relating to the advantages and disadvantages of water fluoridation

We acknowledge that the majority of submitters expressed concern about the safety and efficacy of water fluoridation. Medical and dental associations and representative bodies, and most doctors and dentists, spoke in support of fluoridating water. However, we consider these issues beyond the subject matter of the bill, which is about giving DHBs the power to make a direction about fluoridation.

Main themes raised in submissions

We called for public submissions with a closing date of 18 June 2021. We were particularly interested in hearing people's views on the changes that the SOP proposes and the shift of powers from DHBs to the director-general. We received submissions from 2,384 individuals and organisations and heard oral evidence from 42 submitters.

We set out below the main themes from submissions. We acknowledge the large number of submitters who shared their views about fluoridation. However, in our report we have not commented on submissions that were supportive of, or opposed to, fluoridation generally, but that did not provide specific feedback on changes to the bill proposed by the SOP. This is because the bill as introduced had already been through a full select committee process and, in the time available, we wanted to focus on the changes proposed by the SOP.

Dr Liz Craig
Chairperson

Public object – officials refuse to engage

- Select Committees (2016 & 2021) 'beyond subject matter of bill'
- OPMCSA – 2021 peer reviewers oral/dental experts
- Under 8 y.o.'s – consume may more by bodyweight & retain more fluoride in their bones. (Han et al 2021).
- ✓ Trust – based on fairness & impartiality

Science showing IQ harm is not going away

- NTP Aug 2024
- NTP Review (2024) Concludes with moderate confidence: higher estimated fluoride exposures consistently associated with lower IQ in children.
- Studies identified in the updated literature search had similar study designs and patterns of findings.

Q.3

Does the Ministry of Health and the D-G's s116 undermine the Local Government Act 2002?

Local Government Act 2002

- s125(f)- TA must 'identify and assess any other public health risks relating to the drinking water services supplied to the community'
- 126. Following assessment of community drinking water service –
- 126(3) consider the findings and implications of the assessment in relation to —
(a) TA's broader duty to improve, promote, and protect public health within its district .
- s245(a) A bylaw may be made for the purpose of 'protecting, promoting, and maintaining public health and safety'.
- 145. General bylaw-making power for TA's for:
(b) protecting, promoting, and maintaining public health and safety:
- s153(3) – 'the Crown is bound by any bylaw if non-compliance with that bylaw by the Crown would be likely to have an adverse effect on public health or safety.

Q.4

Does the Ministry of Health and the D-G's s116 undermine the Water Services Act?

Water Services Act 2021

7 Meaning of safe in relation to drinking water

- (1) In this Act, unless the context otherwise requires, **safe**, in relation to drinking water, means drinking water that is unlikely to cause a serious risk of death, injury, or illness,—
 - (a) immediately or over time; and
 - (b) whether or not the serious risk is caused by—
 - (i) the consumption or use of drinking water; or
 - (ii) other causes together with the consumption or use of drinking water.
- (2) For the purposes of subsection (1), the assessment of serious risk must take into account, among other factors, compliance with drinking water standards.
- (3) Drinking water is not unsafe merely because—
 - (a) a person objects to it, or substances in it, because of personal preference; or
 - (b) it does not comply with aesthetic values; or
 - (c) it contains substances that comply with minimum or maximum acceptable values for chemical, radiological, microbiological, or other characteristics of drinking water in the drinking water standards.

MAV 1.5 mg/L direct from 1984 WHO guidelines.

Table 2.2: Maximum acceptable values for inorganic determinands of health significance

Name	MAV (mg/L)	Remarks
antimony	0.02	
arsenic	0.01	For excess lifetime skin cancer risk of 6×10^{-4} . PMAV, because of analytical difficulties
barium	0.7	
boron ¹	1.4	
bromate	0.01	For excess lifetime cancer risk of 7×10^{-5} . PMAV
cadmium	0.004	
chlorate	0.8	PMAV. Disinfection must never be compromised. DBP (chlorine dioxide) never be compromised
chlorine	5	Free available chlorine expressed in mg/L as Cl ₂ . ATO. Disinfection must never be compromised
chlorite	0.8	Expressed in mg/L as ClO ₂ . PMAV. Disinfection must never be compromised. DBP (chlorine dioxide)
chromium	0.05	PMAV. Total. Limited information on health effects
copper	2	ATO
cyanide	0.6	Total cyanides, short-term only
cyanogen chloride	0.4	Expressed in mg/L as CN total. DBP (chloramination)
fluoride ²	1.5	
lead	0.01	
manganese	0.4	ATO
mercury	0.007	Inorganic mercury
molybdenum	0.07	
monochloramine	3	DBP (chlorination)
nickel	0.08	
nitrate, short-term ³	50	Expressed in mg/L as NO ₃ . The sum of the ratio of the concentration of nitrate and nitrite to each of their respective MAVs must not exceed 1.0
nitrite, long-term	0.2	Expressed in mg/L as NO ₂ . PMAV (long term)
nitrite, short-term ³	3	Expressed in mg/L as NO ₂ . The sum of the ratio of the concentration of nitrate and nitrite to each of their respective MAVs must not exceed 1.0
selenium	0.01	
uranium	0.02	PMAV

Notes:

Section 2.4 explains abbreviations that appear in the table.

1. The WHO guideline value (provisional) is 0.5 mg/L.

2. For oral health reasons, the Ministry of Health recommends that the fluoride content for drinking-water in New Zealand be in the range of 0.7–1.0 mg/L; this is *not* a MAV.

3. Now short-term only. The short-term exposure MAVs for nitrate and nitrite have been established to protect against methaemoglobinemia in bottle-fed infants.

4. For information about determinands of possible health significance but which do not have a MAV, refer to the datasheets in the Guidelines.

DRINKING WATER QUALITY ASSURANCE RULES 2022

Released 25 July 2022

Table 33. T3 Treatment Chemical Determinand Minimum Sampling Frequencies

Minimum sampling frequency			
Standard typical range determinands (Typical value < 50% MAV)	Elevated typical range determinands (Value range 50% - 100% MAV)	Chlorate ⁶⁰	FAC, Fluoride ⁶¹
Annually	Monthly	Weekly ⁶²	Continuous

Table 14. T2 Treated Water Monitoring Requirements

Determinands/Parameters	Sampling Frequency	Duration Between Samples ²⁴	Compliance Period
Turbidity (water leaving the treatment plant)	2 per Week	At least 2 Days	1 Month
UVI or UV dose (at the reactor)	2 per Week ²⁵	At least 2 Days	1 Month
Flow ²⁶ (at the reactor)	2 per Week	At least 2 Days	1 Month
FAC (in water leaving the treatment plant)	2 per Week	At least 2 Days	1 Month
pH (in water leaving the treatment plant)	2 per Week	At least 2 Days	1 Month
<i>E. coli</i> (in water leaving the treatment plant)	Monthly	At least 12 Days	1 Month
Total coliforms (in water leaving the treatment plant)	Monthly	At least 12 Days	1 Month
Any chemical used in the treatment process (excluding FAC and Fluoride)	Monthly	At least 12 Days	1 Month
Fluoride (if added, in water leaving the treatment plant)	2 per Week	At least 2 Days	1 Month
UVF	5 per 3 Months	At least 72 Days	1 Year

We received **911** notifications from local and central government supplies in 2022. This included:

- » **387** notifications that determinand levels exceeded a MAV
- » **495** other risks to safety and compliance
- » **23** interruptions to supply
- » **6** concerns or complaints.
- » **37** councils found determinands (including *E. coli*) exceeding MAVs in **75** supplies throughout Aotearoa. Of these, **28** Councils notified *E. coli* exceedances across **51** supplies.
- » *E. coli* was found exceeding MAV in **45** schools, **6** DOC campsites and **1** NZDF facility.

TA legislation requires TCC to protect health

Navigating uncertainty is values-based.

Margin of error: Do cumulative exposures exceed 1.5 mg/L for under 8 y.o.'s

Challenges of risk governance: complexity, uncertainty and ambiguity.

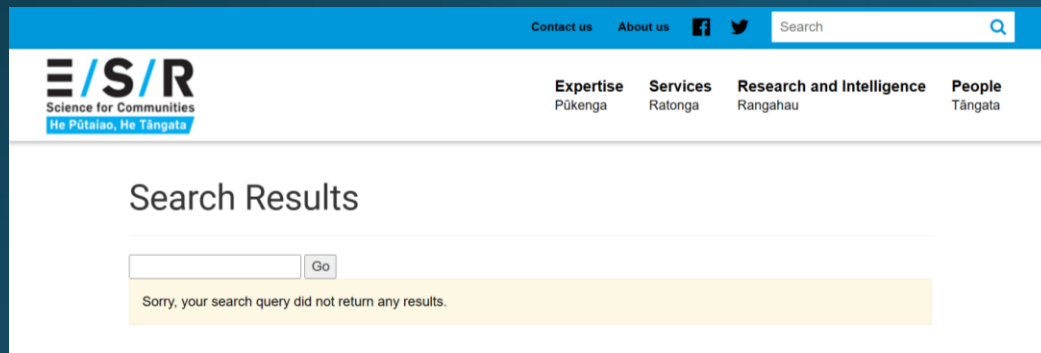
1. Exceeding MAVs = common
2. Toothpaste
3. CPHR Report. Young NZ children have higher urinary levels of fluoride than are present in adults.

† Marnette A, Coakley J, Douwes J. (2018) Report of the Biological Monitoring of Selected Chemicals of Concern. Results of the New Zealand biological monitoring programme, 2014-2016. Technical Report 2017-1. March. Centre for Public Health Research (CPHR). Massey University. Wellington.

TCC: 'We value, protect & enhance the environment'

EPA – never risk assessed F or HFA

- E.g. Children - Margin of safety 10x
- Not monitored by RCs
- No consents required
- Not in ESR's groundwater survey



The screenshot shows the ESR website header with navigation links for 'Contact us', 'About us', and social media icons. Below the header is a search bar with a magnifying glass icon. The main content area is titled 'Search Results' and contains a search input field with a 'Go' button. A yellow message box at the bottom of the search results area states: 'Sorry, your search query did not return any results.'

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:	HYDROFLUOROSILICIC ACID
Other name(s):	Hydrofluosilicic acid; Hydrosilicofluoric acid; HFA.
Recommended Use:	Water fluoridation; sterilising equipment.
Supplier:	Orica New Zealand Limited
Street Address:	Orica Chemnet House Level four, 123 Carlton Gore Road Newmarket, Auckland New Zealand
Telephone Number:	+64 9 368 2700
Facsimile:	+64 9 368 2710
Emergency Telephone:	0 800 734 607 (ALL HOURS)

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433:2007 Transport of Dangerous Goods on Land.

Classified as hazardous according to criteria in the HS (Minimum Degrees of Hazard) Regulations 2001.



Subclasses:

Subclass 6.1 Category D - Substances which are **acutely toxic**.

Subclass 8.1 Category A - Substances that are **corrosive to metals**.

Subclass 8.2 Category C - Substances that are **corrosive to dermal tissue**.

Subclass 8.3 Category A - Substances that are **corrosive to ocular tissue**.

Approval Number: HSR004496

Hazard and Precautionary Information:

Q.5

The D-G charges TCC to put fluoride in municipal water –

(a) s116 does not grant permission to put HFA in municipal water.

(b) Evidence bar – scientific evidence 'reducing prevalence & severity tooth decay'.

S116 – terrible drafting?

- Hydrofluorosilicic Acid (HFA) not stated in legislation.
- Requirement to assess safety not stated in legislation. D-G evidence bar simply to reduce 'prevalence and severity' (not prevent).
- No legal obligation ever to conduct risk assessment to assess safety.
- D-G relies on two papers (2014 & 2021) by the Office of the Prime Ministers Chief Science Advisor (OPMCSA), to justify fluoridating New Zealand.

Court judgements ???

- The public have a legitimate expectation that decision-makers will conduct themselves fairly & properly.
- The Courts have not 'twigged' that not undergoing risk assessment is outside administrative convention, & that safety is not drafted into legislation.
- 'The courts are concerned with not only the "actuality" but also the "perception":
decisions must be reached "justly and fairly", & be seen to be so.'
- Fairness is a guiding principle of administrative law.
- What would a fair-minded lay observer think? With knowledge that:
 - medicine would traditionally undergo safety trials
 - Hazardous substances would undergo risk assessment

Does s116 create manifold inconsistencies and/or absurdities when other legislation is taken into account?

Duty to warn.

Decision-makers should warn of possible adverse findings where the decision-making has potentially significant consequences. They should err on the side of caution, or risk judicial challenge.

The “key elements” of the duty are “surprise” and “potential prejudice”:
“If an adverse finding is foreseeable there is no surprise.”¹⁹⁴

Warnings of adverse credibility findings in such hearings will seldom be required, as the applicant’s credibility will almost always be in issue.¹⁹⁶

The duty to warn arises where the risk of adverse findings is neither implicit in the nature of the inquiry nor obvious from the conduct of the hearing. With some inquiries, the risk of adverse findings may not be obvious from the terms of reference or the conduct of the hearing.

Joseph 25.4.3

Risk assessment

Not a departure from the science –

but being true to science.

Questions for the Mayor & Councillors

1. The DG has made clear he will not press for Hastings Council to conform to the fluoridation order they are under until further legal issues are resolved. We request that TCC commit to writing to the DG, seeking assurance that the same applies to Tauranga (as the circumstances are effectively the same other than that the DG is not facing legal action with respect to Tauranga).
2. We request that TCC set up a process to further review the issues and options.

Fluoride – *safety* not in s116.

1. Is it appropriate that NZ's 'gold standard' for the safety of fluoride established by a politically-timed review from the OPMCSA?
2. Is it appropriate that risk assessment to judge pre-existing exposures in infants and children & risk from fluoride dosed into water, by developmental stage & bodyweight has not occurred in New Zealand?
3. Does the Ministry of Health and the D-G's s116 undermine the Local Government Act 2002?
4. Does the Ministry of Health and the D-G's s116 undermine the Water Services Act?
5. The D-G charges you to put fluoride in municipal water –
 - (a) s116 does not grant permission to put HFA in municipal water.
 - (b) Evidence bar – scientific evidence 'reducing prevalence & severity tooth decay'.

PSGR

Physicians & Scientists for Global Responsibility

- PSGR.org.nz
- Social media @PSGRNZ
Instagram, Spotify, Twitter, Substack.

Thank you for listening.

Hazardous substance

- Hormone disrupting properties.
- Evidence disrupts function of tissues that require iodine.
- Pediatric/adult risk
- Crosses placenta and brain barrier
- Low concentrations enhanced by aluminium.

Han et al Chemical Aspects of Human and Environmental Overload with Fluorine.

Chem. Rev. 2021, 121, 4678–4742. doi 10.1021/acs.chemrev.0c01263.

Study states that less than 50% of fluoride ingested is excreted, with young children retaining up to 80% of fluoride.

