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Physicians & Scientists for Global Responsibility

FLUORIDE TIMELINE

1956	The Health Act 1956. Function: Ministry of Health shall have the function of improving, promoting, and protecting public health.
1960s	Fluoridation of municipal water supplies commences in many New Zealand towns and cities.
1984	World Health Organization (WHO) sets guideline value for drinking water, 1.5 mg/l. 1984 WHO EHC 36. The 'optimum' level was established in 1957 from earlier studies identifying the average levels in fluoridated drinking water. The 'optimum' level was established before fluoridated toothpaste was introduced. The WHO 2022 *Guidelines for drinking-water quality, Fourth Edition* (p.403) cites 1.5mg/l as the guideline value. Assessment date given is 2003, however the 2003 assessment drew from the 1984 information. In 2008 the WHO stated 'There is no evidence to suggest that the guideline value of 1.5 mg/litre set in 1984 and reaffirmed in 1993 needs to be revised.' (p.377a) The WHO has not assessed cognitive neurodevelopmental risk.
1990	New Zealand Bill of Rights Act 1990. Includes s11 Right to refuse medical treatment.
Jul 22, 1991	Resource Management Act 1991.Authorities are required to sustainably manage natural resources, providing for the health and safety of people and communities, ensuring resources meet the foreseeable needs of future generations; safeguard the life-supporting capacity of water, and avoid, remedy or mitigate adverse effects of activities. NB. Fluoride has 'slipped through the cracks' – as no risk assessment has been undertaken of fluoride, fluoride is not monitored, and consents do not appear to be required for long-term emissions to the environment.
1996	Hazardous Substances and New Organisms Act 1996. The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms (s.4). Requires that 'All persons exercising functions, powers, and duties under this Act … shall take into account the need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects.'

Dec 24, 2002	Local Government Act 2002. This Act promotes the accountability of local authorities to their community. An assessment of drinking water services s125(f) must '*identify and assess any other public health risks relating to the drinking water services supplied to the community*'. A bylaw may be made s245(a) for the purpose of '*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.*' Other relevant sections include 101B(d), 125(f), 126(c), 145(b).
2006	National Research Council (NRC). 2006. Committee on fluoride in drinking water, board on environmental studies and toxicology. *Fluoride in drinking water: A scientific review of EPA's standards.* National Research Council.
2013	European Food Safety Authority (EFSA). *Scientific Opinion on Dietary Reference Values for fluoride.* EFSA Panel on Dietetic Products, Nutrition, and Allergies (NDA). EFSA Journal 2013;11(8):3332. Notes that fluoride is not a nutrient.
Feb 2014	Professor Paul Connett, PhD, travels New Zealand, discussing: Why Fluoridation Should be Ended in New Zealand. Councillors who attended an Auckland presentation ask Dr Roger Blakeley, Chief Planning Officer for Auckland Council, to review Dr Paul Connett's claim. Dr Blakeley then requests (more detail on the Fluoride Free timeline) the Prime Minister's Chief Science Advisor (PMCSA), the Royal Society of New Zealand (RSNZ), and the Ministry of Health, to review the scientific evidence for and against the efficacy and safety of fluoridation of public water supplies.
Mar 2014	*New Health New Zealand Inc v South Taranaki District Council [2014] NZHC 395.* Judgement of Hansen J. All grounds of challenge rejected. Challenge claiming Council decision to fluoridate drinking water, adding fluoride for therapeutic purposes constitutes a breach of the right to refuse to undergo medical treatment contained in s 11 of the New Zealand Bill of Rights Act 1990 (NZBORA) and the breach: has not been prescribed by law, is an unjustified and disproportionate limitation on the right in s11, and that Council failed to take into account mandatory relevant considerations. Judge Hansen states a requirement to: 'address concern the power of a local body to fluoridate drinking water supply. That is a legal question which does not require me to canvas or express a view on the arguments for and against fluoridation.' Judge concludes fluoride not medical treatment but accepts fluoridation has therapeutic purpose. Judge sees fluoridation similar to iodine added to salt. Judge notes 'the evidence relied on by the Council shows that the advantages of fluoridation significantly outweigh the mild fluorosis which is an accepted outcome of fluoridation.' (Iodine is an essential nutrient for growth and development).
Mar 2014	Mullenix, P.J. (2014). *A new perspective on metals and other contaminants in fluoridation chemicals. International Journal of Occupational and Environmental Health*, 20, 157 - 166. DOI 10.1179/2049396714Y.0000000062. In this study, all Hydrofluorosilicic acid [HFS] H_2SiF_6 (CAS no. 1961-83-4) samples contained arsenic. Study noted that 'contaminant content creates a regulatory blind spot that jeopardizes any safe use of fluoride additives.' … 'Fluoride additives

	used in the water fluoridation process are a potential source for metal ingestion by humans and have not yet been adequately investigated. The production of fluoride additive involves phosphate rock, which contains cadmium (Cd), arsenic (As), lead (Pb), chromium (Cr), mercury (Hg), nickel (Ni), vanadium (V), uranium (U), and other radionuclides and metals at levels that vary by geographical origin.' Study found that metal contaminant content of raw fluoride additives is highly batch dependent. There was as much as a 10-fold difference between batches in the concentration levels of arsenic, lead, and barium.
Jun 2014	*Safe Water Alternative New Zealand Inc v Hamilton City Council [2014] NZHC 1463.* Judgement of Kos J. Application for interim relief denied. Plaintiff claims Hamilton City Council recommencement of fluoridation of water unlawful and that Council was obliged to carry out a special consultation procedure before making decision to resume fluoridation, and failed to do that. In addition, Council failed to have regard to why fluoridation ceased in 2013. In 2013 fluoridation ceased after a consultation where 1,385 submissions said no to fluoridation, while 170 advocated for continued fluoridation. Safe Water contends that there are real safety issues in relation to the use of hydrofluorosilicic acid [HFS], the chemical used to fluoridate water. It is, it says, a highly toxic by-product of the superphosphate industry. The judge does not address this concern. Judge states: On the other hand, Hamilton's water supply was continuously fluoridated from 1966-2013. And there is no evidence before that would suggest that the short term resumption of this practice would be harmful to public safety. I take judicial notice of the fact that fluoridation is common in other New Zealand districts. And that it is apparently supported by the Ministry of Health. Safe Water's deponent, Mr Crosbie, does not hold any relevant medical qualifications. Considerations of public health safety are also neutral.' Issues of cognitive neurodevelopmental risk are not addressed in judgement.
Nov 2014	Health report no.20141527. Hon Jonathan Coleman (Minister of Health). Fluoride in drinking water: Urgent amendment to Medicines Regulations 1984 proposed.
Jan 2015	Broadbent, J. M., W. M. Thomson, S. Ramrakha, T. E. Moffitt, J. Zeng, L. A. Foster Page and R. Poulton (2015). *Community water fluoridation and intelligence: Prospective study in New Zealand. American Journal of Public Health* 105(1): 72-76. This study was heavily weighted by the Office of Prime Minister and Cabinet's Chief Science Advisors (OPMCSA) in a later 2021 Evidence Update where Broadbent was a peer reviewer of that paper. This paper considered to have a high risk of bias in a 2022 United States National Toxicology Program review.
Jun 2015	Cochrane Review. Iheozor-Ejiofor Z, Worthington HV, Walsh T, O'Malley L, Clarkson JE, Macey R, Alam R, Tugwell P, Welch V, Glenny AM. *Water fluoridation for the prevention of dental caries*. Cochrane Database of Systematic Reviews 2015, Issue 6. Art. No.: CD010856. DOI: 10.1002/14651858.CD010856.pub2.

	No studies that aimed to determine the effectiveness of water fluoridation for preventing caries in adults met the review's inclusion criteria. Review noted that most evidence claiming effectiveness of water fluoridation at preventing dental caries from studies prior to 1975 and prior to when fluoride added to toothpaste. Review found that there was a significant association between dental fluorosis and fluoride level. Review did not review evidence on cognitive neurodevelopmental risk and toxicity.
Sept 2015	Moore D and Poynton M. *Review of the benefits and costs of water fluoridation in New Zealand.* Sapere Research Group. Review exclusively considers economic costs and does not consider the toxicity and potential neurological risk of fluoride.
March 21, 2016	Regulatory Impact Statement: Transferring decision-making on the fluoridation of drinking-water from local authorities to district health boards (RIS). Cathy O'Malley, Acting Director Service Commissioning Ministry of Health. Benefits versus costs discussion revolves around economic costs. States that earlier High Court judgements: • New Health New Zealand Inc v South Taranaki District Council [2014] NZHC 395 • Safe Water Alternative New Zealand Inc v Hamilton City Council [2014] NZHC 1463. The RIS stated that the High Court 'found that, even if water fluoridation did engage section 11 of the Bill of Rights Act, councils' power to fluoridate water is a justified restriction of the right to refuse medical treatment – because the benefits of fluoridation far outweigh its risks.' The RIS did not discuss the potential for cognitive neurodevelopmental risk and there is no PDF available to confirm whether NZHC 395 and NZHC 1463 judgements considered this potential.
June 2016	Moore D and Poynton M. *The benefits and costs of water fluoridation - a summary for DHBs*. Sapere Research Group. DHBs are not advised of any toxicological risks.
July 1, 2016	NTP (National Toxicology Program). 2016. *Systematic Literature Review on the Effects of Fluoride on Learning and Memory in Animal Studies.* NTP Research Report 1. Research Triangle Park, NC: National Toxicology Program.
Nov 17, 2016	*Health (Fluoridation of Drinking Water) Amendment Bill* 208-2 introduced. Ministry of Health decides to shift power away from local authorities to District Health Boards, to decide whether to fluoridate local drinking water. Supported in policy by March 21 RIS.
Dec 2016	Health (Fluoridation of Drinking Water) Amendment Bill stalls in Select Committee. Select Committee dismissed the majority of submitters concerns about the safety of fluoride considering 'these issues beyond the subject matter of the bill, which is about giving DHBs the power to make a direction about fluoridation'.
2017	*Australian and New Zealand Nutrient Reference Values for Fluoride* including supporting documentation released. Supporting documents

Australian and New Zealand Nutrient Reference Values for Fluoride A report prepared for the Australian Government Department of Health and the New Zealand Ministry of Health.

Upper level of intake (page 52) based on appearance of fluorosis. 3 papers cited for evidence of impact to intelligence. This Expert Working Group (EWG) did not consider intelligence suitable as a biomarker). (P.24)

1. Borman B, Fyfe C 2013. Developmental fluoride neurotoxicity: a systematic review and meta-analysis. Comment, NZ Med J; 126(1375): 111-2.
2. Broadbent JM, Thomson WM, Ramrakha S, Moffitt TE, Zeng J, Foster Page LA, Poulton R 2015. Community water fluoridation and intelligence: prospective study in New Zealand, Am J Public Health; 105(1): 72-6.
3. Choi AL, Sun G, Zhang Y, Grandjean P 2012. Developmental fluoride neurotoxicity: a systematic review and meta-analysis, Environ Health Perspect; 120(10): 1362-8.

One study concerning ADHD risk dismissed by the EWG:

- Malin AJ, Till C 2015. Exposure to fluoridated water and attention deficit hyperactivity disorder prevalence among children and adolescents in the United States: an ecological association, Environ Health; 14: 17.

National Health and Medical Research Council (NHMRC) 2017, *Evaluating the evidence on water fluoridation and human health in Australia 2014-2017: Administrative Report,* NHMRC; Canberra. The 2014-2017 period excluded many relevant studies produced before this time.

Pre-2017 studies reviewed by the US NTP but excluded by the NHMRC EWG include:

- Ding Y, Sun H, Han H, Wang W, Ji X, Liu X, Sun D. 2011. The relationships between low levels of urine fluoride on children's intelligence, dental fluorosis in endemic fluorosis areas in Hulunbuir, Inner Mongolia, China. J Hazard Mater. 186:1942-1946.
- Rocha-Amador D, Navarro ME, Carrizales L, Morales R, Calderon J. 2007. Decreased intelligence in children and exposure to fluoride and arsenic in drinking water. Cad Saude Publica. 23(Suppl 4):S579-587.
- Saxena S, Sahay A, Goel P. 2012. Effect of fluoride exposure on the intelligence of school children in Madhya Pradesh, India. J Neurosci Rural Pract. 3:144-149.
- Seraj B, Shahrabi M, Shadfar M, Ahmadi R, Fallahzadeh M, Eslamlu HF, Kharazifard MJ. 2012. Effect of high water fluoride concentration on the intellectual development of children in Makoo, Iran. J Dent. 9:221-229.
- Sudhir KM, Chandu GN, Prashant GM, Subba Reddy VV. 2009. Effect of fluoride exposure on intelligence quotient (IQ) among 13-15 year old school children of known endemic area of fluorosis, Nalgonda District, Andhra Pradesh. J Indian Assoc Public Health Dent. 2009(13):88-94.
- Trivedi M, Sangai N, Patel R, Payak M, Vyas S. 2012. Assessment of groundwater quality with special reference to fluoride and its impact on IQ of schoolchildren in six villages of the Mundra Region, Kachchh, Gujurat, India. Fluoride. 45(4):377-383.
- Wang G, Gao M, Zhang M, Yang M, Xiang Q. 2012. Correlation between total fluoride intake and children's IQ. J Southeast Univ Med Ed.743-746.
- Xiang Q, Liang Y, Chen L, Wang C, Chen B, Chen X, Zhou M. 2003a. Effect of fluoride in drinking water on children's intelligence. Fluoride. 36:84-94.

	• Xiang Q, Liang Y, Chen B, Chen L. 2011. Analysis of children's serum fluoride levels in relation to intelligence scores in a high and low fluoride water village in China. Fluoride. 44:191-194. • Zhang S, Zhang X, Liu H, Qu W, Guan Z, Zeng Q, Jiang C, Gao H, Zhang C, Lei R et al. 2015b. Modifying effect of COMT gene polymorphism and a predictive role for proteomics analysis in children's intelligence in endemic fluorosis area in Tianjin, China. Toxicol Sci. 144:238-245.
2017	Fluoride case in the United States commences under the Toxic Substances Control Act (1976). 'TSCA lawsuit' • 2016 - Groups petition US EPA to cease fluoridation of water. EPA rejects petition. • 2017 - Groups sue EPA in Federal Court. • 2020 (June) – phase 1, evidence on fluoride's neurotoxicity heard by the court (7 day trial). • 2024 (February) – phase 2, further evidence heard (14 day trial). Experts presented evidence from their own research showing neurotoxic risks - particularly to pregnant women, formula-fed infants and children- posed by water fluoridation. For some reason New Zealand judgements and OPMCSA do not refer to the findings in the TSCA lawsuit, despite the fact that officials from regulatory agencies that New Zealand references, make seemingly relevant admissions to the New Zealand fluoride debate.
Nov 2017	Moore D, Poynton M, Broadbent JM, Thomson WM. *The costs and benefits of water fluoridation in NZ.* BMC Oral Health. 2017 Nov 28;17(1):134. doi: 10.1186/s12903-017-0433-y. PMID: 29179712; PMCID: PMC5704512. This review does not broadly review the health-based risks and discuss the scientific uncertainty relating to the toxicity of fluoride and the compound HFS, which is added to municipal water.
Mar 2018	't Mannetje 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. Report shows that young children have higher urinary levels of fluoride than are present in adults. This report has not been considered in any Ministry of Health or OPMCSA fluoride-related reports. NB: Fluoride intake estimates for Australia and New Zealand were conducted before this paper was published.
June 2018	*New Health New Zealand v South Taranaki District Council [2018] SC 141/2016 [2018] NZSC 59*. Question of whether fluoridation is a demonstrably justified limit prescribed by the law (BORA s5). Supreme Court judgement, appeal dismissed. Applicant argued that the fluoridation of water supplies was unlawful because it was not authorised by statutory provisions, and involved a breach of the right to refuse to undergo medical treatment contrary to s 11 of the New Zealand Bill of Rights Act 1990 (NZBORA). Judges defer to World Health Organization (WHO has not assessed cognitive neurodevelopmental toxicity of fluoride), NZ Ministry of Health and the OPMCSA to confirm the

	lack of detriment from water fluoridation. Judgement considered risk from fluorosis but did not discuss cognitive neurodevelopmental risk. Judge Elias states 'I conclude that the addition of fluoride to the water supplied by the Council is medical treatment within the meaning of s 11 of the New Zealand Bill of Rights Act.'[243]
Aug 2018	Clark E, Foster Page LA, Larkins K, Leon de la Barra S, Murray Thomson W. Caries-preventive efficacy of a supervised school toothbrushing programme in Northland, New Zealand. Community Dent Health. 2019 Feb 25;36(1):9-16. doi: 10.1922/CDH_4337Clark08. PMID: 30667188.
Nov 2018	TCSA Lawsuit. United States Centre for Disease Control agrees with finding that fluoride can potentially cause Alzheimers and dementia and that there is no early life benefit from fluoride.
Jun 8, 2019	TCSA lawsuit. Evidence from Dr. Joyce Donohue, EPA scientist, Office of Water and spokesperson on fluoride testimony, based on a video recording of a 4 – 5 hour deposition given to lawyer for the plaintiffs Michael Connett in 2019, concedes: a) The EPA as of 2019 had no studies to provide a pregnant woman to show her fetus was safe from neurotoxicity. In fact the EPA only had studies showing harm to the fetus. b) Dr. Donohue recommends EPA and other regulatory bodies do risk assessments of fluoride with neurotoxicity as an end point. All EPA risk assessments on fluoride to date have been based on potential damage to teeth and bones.
Aug 2019	Curnow MM, Pine CM, Burnside G, Nicholson JA, Chesters RK, Huntington E. *A randomised controlled trial of the efficacy of supervised toothbrushing in high-caries-risk children.* Caries Res. 2002 Jul-Aug;36(4):294-300. doi: 10.1159/000063925. PMID: 12218280.
Sept 6, 2019	Draft NTP Monograph on the Systematic Review of Fluoride Exposure and Neurodevelopmental and Cognitive Health Effects. Office of Health Assessment and Translation, Division of the NTP, National Institute of Environmental Health Sciences, National Institutes of Health, US Department of Health and Human Services. 2019. The monograph "concludes that fluoride is presumed to be a cognitive neurodevelopmental hazard to humans. This conclusion is based on a consistent pattern of findings in human studies across several different populations showing that higher fluoride exposure is associated with decreased IQ or other cognitive impairments in children"
March 5, 2020	National Academies of Sciences, Engineering, and Medicine; Division on Earth and Life Studies; Board on Environmental Studies and Toxicology; Exposure and Neurodevelopmental and Cognitive Health Effects; Committee to Review the NTP Monograph on the Systematic Review of Fluoride. *Review of the Draft NTP Monograph:* Systematic Review of Fluoride Exposure and Neurodevelopmental and Cognitive Health Effects. Washington (DC): National Academies Press (US); 2020 Mar 5. PMID: 32200598. Committee finds that NTP has not adequately supported its conclusion in the 2019 draft.

Aug 6, 2020	Taumata Arowai–the Water Services Regulator Act 2020. Taumata Arowai's objectives include to protect and promote drinking water safety and related public health outcomes; and effectively administer the drinking water regulatory system. There are no instructions on Taumata Arowai's website ensuring that the full compound added to drinking water, is safely treated.
Sept 16, 2020	*National Toxicology Program. Draft NTP Monograph on the Systematic Review of Fluoride Exposure and Neurodevelopmental Cognitive Health Effects. US Department of Human Services.* 'When focusing on findings from studies with exposures in ranges typically found in drinking water in the United States (0.7 mg/L for optimally fluoridated community water systems)9 that can be evaluated for dose response, effects on cognitive neurodevelopment are inconsistent and, therefore, unclear. However, when considering all the evidence, including studies with exposures to fluoride levels higher than 1.5 mg/L in water, NTP concludes that fluoride is presumed to be a cognitive neurodevelopmental hazard to humans. This conclusion is based on a moderate level of evidence that shows a consistent and robust pattern of findings in human studies across several different populations demonstrating that higher fluoride exposure (e.g., >1.5 mg/L in drinking water) is associated with lower IQ and other cognitive effects in children.'(p.91/320) NB. Point of contention: Participating NTP scientists will not confirm that below 1.5mg/L is not a cognitive neurodevelopmental hazard. I.e. no consensus on safety at below 1.5 mg/L.
June 1, 2021	*Supplementary Order Paper No. 38* to the Health (Fluoridation of Drinking Water) Amendment Bill released. SOP shifts power to the Director-General of Health to direct a local authority to add or not to add fluoride to drinking water supplied through its local authority supply.
June 2, 2021	*Fluoridation: an update on evidence - 02 June 2021* (OPMCSA). Political document timed to garner public support for the SOP 38 release. This is not an independent toxicological assessment. Updated October 2021. Peer reviewers predominantly include oral and dental health experts with a predetermined position on the safety of fluoride, who have previously released papers supporting the safety of fluoride. Independent toxicological and endocrinological experts are not listed as peer reviewers. Update does not mention information arising from US TCSA court case discovery process which might be relevant to a consensus position on the safety of fluoride. When discussing the NTP study, the OPCSA briefly refers to the finding that fluoride is presumed to be a cognitive neurodevelopmental hazard but emphasises that the draft does not constitute policy. OPMCSA then downplayed the NTPs scientific uncertainty relating to fluoride toxicity at levels less than 1.5mg/l. OPMCSA then turned to the Broadbent study to state that no NZ evidence can be shown for evidence of IQ or cognitive effects.
June 9, 2021	Inquiry into Supplementary Order Paper No. 38 on the Health (Fluoridation of Drinking Water) Amendment Bill opens, with a short window, submissions due June 18, 2021.
August 2021	*Report of the Health Committee* following the Inquiry (Chair Liz Craig). Committee Report states that 2,300 people responded. The Committee did

	not comment on submissions '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.
Oct 4, 2021	Water Services Act 2021 comes into force, administered by the Department of Internal Affairs. The main purpose (s.3) of this Act is to ensure that drinking water suppliers provide safe drinking water to consumers by— (a) providing a drinking water regulatory framework that is consistent with internationally accepted best practice …'. S.7 [S]afe, 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. NB. No risk assessment has been undertaken to assess risk by age and weight, total exposures (including toothpaste) to confirm whether fluoridated water is safe from conception onwards by developmental stage. The March 2018 CPHR paper confirmed that young children in New Zealand have higher levels of fluoride in their drinking water. This relevant information has not been considered by the Department of Internal Affairs, Ministry of Health, the OPMCSA, nor the courts alongside dietary exposures.
Nov 2021	*Health (Fluoridation of Drinking Water) Amendment Bill 2016 (2017 No 208-2) Bills Digest* does not contain information analysing the safety of the fluoridation of drinking water, and the efficacy by age, including in early developmental periods. The regulatory impact statement is dated March 2016 and the only side effect discussed is fluorosis which is dismissed as minimal and not of cosmetic significance.
Nov 15, 2021	Health (Fluoridation of Drinking Water) Amendment Act 2021 comes into force. The Act exclusively mentions fluoride. However, fluoride is added into municipal water by Councils as the compound Hexafluorosilicic acid (also known as hydrofluorosilicic acid) [HFS]. The wording of the Act only allows the addition of fluoride; the addition of HFA and the toxic heavy metals it contains, may be misleading and arguably illegal.
Dec 13, 2021	Health Act 1956 amended (s116E) to give powers to Director-General of Health to direct local authorities to add or not to add fluoride to drinking water. The Director-General must consider the scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay. • S116H A local authority that receives a direction under section 116E or an invitation to comment under section 116G is not required to consult on any matter related to the direction or invitation. • S116I A local authority that receives a direction under section 116E must comply with the direction.

	• S116J Penalties for non-compliance are up to $200,00 on conviction and further fine of up to $10,000 per day. NB. There is no obligation for the Director-General to consider hazard and risk (by age, developmental status and to assess total exposures – as s116E states 'effectiveness' and does not mention safety. S116H then stats that the local authority does not need to consult, and then s116I must comply. These sections may contradict the Local Government Act 2002 which requires that a broad understanding of risk to communities is understood. The S116E amendment does not prioritise safety nor require authorities to consider age, developmental stage and pre-existing exposures (toothpaste). 'Prevalence' requires a marginal reduction in cavities, and this is not required to be balanced against other health risks. These sections may contradict the Water Services Act 2021 which requires that authorities consider cumulative exposures. Fluoride is a non-nutrient and a recognised toxicant.
2021	Paper released: *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. This study has not been considered, and the implications of chronic absorption from conception, by New Zealand authorities.
2021	*Vote Health (New Zealand Budget) 2021/2022. $8.300 million for a transfer to 2022/23 for the implementation of the fluoridation subsidy scheme, reflecting the rephasing of the programme.*
April 2022	*Draft NTP Monograph on the State of the Science Concerning Fluoride Exposure and Neurodevelopmental and Cognitive Health Effects: A Systematic Review NTP Monograph 08*. 6 year review. Considered to be completed. Can be accessed in this document.
April 2022	The 2022 draft NTP Monograph comments on New Zealand study, Broadbent et al.(2015) study to have 'high risk of bias' due to 'multiple sources of fluoride exposure were assessed separately without properly controlling for the other sources of exposure, which could bias the results. Broadbent et al. (2015) assessed fluoride exposure in three ways: use of community water in a fluoridated area versus a non-fluoridated area, use of fluoride toothpaste (never, sometimes, always), or use of fluoride tablets prior to age 5 (ever, never). The same children were used for each analysis without accounting for fluoride exposure through other sources. For example, there were 99 children included in the non-fluoridated area for the community water evaluation, but there is no indication that these 99 children were not some of the 139 children that had ever used supplemental fluoride tablets or the 634 children that had always used fluoride toothpaste. Therefore, comparing fluoridated areas to non-fluoridated areas without accounting for other sources of exposure that might occur in these non-fluoridated areas would bias the results toward the null.' (page 66/1573)

June 3 2022	TCSA litigation evidence includes staff commentary that US Assistant Secretary of Health ASH (Rachel) Levine suspended release of the NTP Monograph. Freedom of Information Act requests revealed that NTP's scientific director Dr Brian Berridge, who was responsible for the NTP Monograph project discussed in emails, political pressure to modify the report. (See here)
Jun 7, 2022	*Water Services (Drinking Water Standards for New Zealand) Regulations 2022.* Table 2, Maximum acceptable values for inorganic determinands. Fluoride 1.5 mg/L reflects the World Health Organization 1984 level. No drinking water standard for the full formulation added to water, HFS, CAS No. 16961-83-4). No risk assessment to understand environmental impact and risk at this level for invertebrates and vertebrates has ever been undertaken, including comprehensive consultation with Māori.
July 25, 2022	*Memo, including July 2022 Report* sent from Dr Andrew Old, Deputy Director-General, Public Health Agency seeking a decision from Dr Ashley Bloomfield (Director-General of Health) to order local authorities in 14 regions to fluoridate tap water.
July 2022	*Report to the Director-General of Health: potential directions to fluoridate (from p.7)* notes that 'statute (section 116E) states that for each drinking water supply the Director-General (D-G) must consider: 1. The scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay (section 116E(3)(a)) 2. Whether the benefits of adding fluoride to the drinking water supply outweigh the financial costs, taking into account community oral health, population level and cost. The newly inserted sections (116 of the Health Act 1956, does not require the D-G to consider the toxicity of fluoride or the compound added to drinking water
July 2022	*Report to the Director-General of Health: potential directions to fluoridate (from p.7)* for each local authority, includes a *Criterion: 1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay.* 'The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014.'
Sept 2022	Draft NTP Monograph on the State of the Science Concerning Fluoride Exposure and Neurodevelopmental and Cognitive Health Effects: A Systematic Review NTP Monograph 08. 6 year review. Released with track changes, comments from reviewers. Can be accessed in this document.

Aug-Sept 2022	*New Health New Zealand Inc v Wellington Water Ltd [2022] NZHC 2389*. Judgement of Cooke J. Interim relief declined. August 30 application sought to prohibit the reintroduction of fluoride into Wellington's drinking water supply until further order of the Court. Fluoridation had been stopped due to operational issues. Judge notes: ([4]) 'The applicant has a well-established track record of challenging decisions to introduce fluoride into New Zealand's drinking water supplies. It unsuccessfully challenged such decisions in 2013–2018 before the High Court, the Court of Appeal, and the Supreme Court.' Noting: 'In short the applicant's challenge has already been substantially heard and determined.' Applicant forwarded expert evidence on underlying issues but judge did not consider that there was a strong case to say there had been substantial developments and that legality was addressed in earlier Supreme Court judicial review. Judge also notes: Wellington water supplies have been fluoridated since the 1960s, and the argument that the operational failures mean that interim relief is now appropriate pending the substantive challenge is at best opportunistic, and also somewhat artificial given that full fluoridation has largely been restored. The applicant has already engaged in very extensive litigation contending that fluoridation of drinking water supplies is unjustified, and that litigation has failed in the High Court, the Court of Appeal, and the Supreme Court. Its views have been heard and already dismissed at all levels. In any event there is now legislation that prevents local authorities from discontinuing fluoridation.' Respondents entitled to costs.
Nov 2022	Director-General of Health writes to 27 councils informing that one or more of their water supplies were being considered for fluoridation.
Nov 2022	Deputy Public Service Commissioner announces the appointment of Dr Diana Sarfati as Director-General of Health and Chief Executive, Ministry of Health.
Feb 2023	National Institutes of Health (NIH) agreed to publicly release the NTP's completed fluoride monograph after being served a court order.
May 16, 2023	*NTP Board of Scientific Counselors Working Group Report on the Draft State of the Science Monograph and the Draft Meta-Analysis Manuscript on Fluoride.* Final Report: Approved by the NTP Board of Scientific Counselors on May 16, 2023. Includes NTP Monograph with reviewers comments.
Aug 2, 2023	Official Information Act (OIA) request ENQ-46314-J8S0C9. The EPA holds information on the hazard classifications of sodium fluoride (CAS no.7681-49-4), sodium hexafluorosilicate (16893-85-9) and Hexafluorosilicic acid and Hexafluorosilicic acid, >5% in a non hazardous diluent (16961-83-4)[HFS] in their Chemical Classification and Information Database (CCID). NZEPA states that the fluoride-containing compounds sodium fluoride and hexafluorosilicic acid have been tested for toxicity (human) and ecotoxicity (environment) using the same test systems that are applied in the safety evaluation of new drugs and pesticides. NZEPA confirms no testing is currently undertaken on New Zealand native species as part of the hazardous substance approval process. Fluoride-related test data taken from overseas surrogate species that are similar to our native species appears not to be reviewed. NZEPA considers European findings, however (decades old) European studies do not

	explore the impact of long term, environmentally relevant exposures (from wastewater emissions) that may impact vertebrate systems over a lifetime. The NZEPA cites the OPMCSA 2014 study to claim water fluoridation 'water fluoridation at the levels used in Aotearoa New Zealand pose no significant health risks.' (Hexafluorosilicic acid is also known as hydrofluorosilicic acid.)
Nov 10, 2023	*New Health New Zealand Inc v Director-General of Health [2023] NZHC 3183*. Judgement of Radich J. 'The Director-General was required to turn his mind to whether the directions given to the 14 local authorities under s 116E of the Health Act were in each case a reasonable limit on the right to refuse medical treatment, he needed to be satisfied that they were and, if satisfied, he needed to say why that was so.' The Director General made an error of law in failing to take into account and give due weight to BORA.
Dec 19, 2023	OIA request H2023033161 to Ministry of Health confirms that the Ministry have never considered the 2018 report of the CPHR which shows young children have higher levels of fluoride in their bodies. The OIA request asked 'Please provide all reasoning by the (i) Ministry of Health and the (ii) Director-General considering the safety of exposures in drinking water balanced against current levels in urine in New Zealand children, and the potential risk of neurotoxicity (cognitive and IQ) based on additive exposures from natural sources and levels in drinking water.' A link to the Director-General of Health's 25 July 2022 memo was provided. No information in the Memo considers risk balanced against current fluoride levels in children and the risk based on additional exposures. The request asked for reasoning as to why the findings of a politically appointed body (the OPMCSA) who is not a regulatory authority should be deemed to be sufficiently authoritative to justify the safety and efficacy. This was refused as the information does not exist.
2023	Vote Health (New Zealand Budget) 2023/2024. $9 million for the net impact of a transfer to 2023/24 for the implementation of the fluoridation subsidy
Jan 16, 2024	OIA request ENQ-47164-R4K7F7 confirms that the NZEPA did not provide scientific or legal advice or other relevant information pertaining to the formulation of the *Health (Fluoridation of Drinking Water) Amendment Bill 2021.* No advice was provided to the NZEPA from either the Crown Law Office or the Attorney General that the Amendment Bill may give arise to inconsistencies under s 4, 5, and 6 of the *Hazardous Substances and New Organisms Act (1996)* (HSNO Act) due to persistent emissions of fluoride to fresh and marine water via wastewater treatment plants. NZEPA notes that sodium fluoride and hexafluorosilicic acid are considered hazardous substances as defined under the HSNO Act. These substances do not have individual approvals. The NZEPA states that they do not hold any information on the sourcing of these two compounds or whether they are imported. NZEPA states these chemicals readily hydrolyse in water to produce free fluoride ions and are not highly persistent in the environment. The NZEPA does not discuss the health or environment-based risk that arises from contaminant mixtures of heavy metals contained in hydrofluorosilicic acid [HFS] H2SiF6.

Feb 16, 2024	*New Health New Zealand Inc v Director-General of Health [2024] NZHC 196* [Relief judgment]. This decision is to be read alongside the November 10, 2023 Decision. Radich J was "not satisfied that the appropriate remedy [was] to quash the [Direction]". Therefore, the Direction "continues to have effect unless and until it is revoked or amended by the Director-General". 'The reconsideration, insofar as this decision is concerned, is to be limited to an assessment of whether the directions given to the 14 local authorities under s 116E of the Health Act were in each case in terms of s 5 of the Bill of Rights Act reasonable limits on the right to refuse medical treatment prescribed by law as can be demonstrably justified in a free and democratic society. The plaintiff's views on the issue are to be taken into account.'
May 24, 2024	Fluoride Action Network (NZ) Inc v Hastings District Council [2024] NZHC 1781. Judgement of La Hood J. Fluoride Action Network (NX) Inc and NZDSOS Inc apply for judicial review seeking to prevent the re-fluoridation of Hastings' urban water supply dismissed. Judge finds applicants failed to establish that the Council's decision to comply with the D-G's direction was unlawful. Costs awarded on a 2B basis with certification for second counsel.
Jun 11, 2024	Fluoride Free NZ Overview of Current Campaigns. Status of Councils that were Directed in 2022. Site contains link to information relating to all New Zealand fluoridated regions.
Jun 26, 2024	New Health New Zealand Inc v Director-General of Health [2024] NZHC 1717. Judgement of Radich J. Lawyer for the Director General and Attorney-General in a June 26 2024 teleconference stated that there was: 'no indication that the Director-General would take enforcement action in relation to the directions.'[8]… 'Moreover, as has been said for the respondents, there has been no indication that the Director-General would take enforcement action and the Director-General has not taken any such action. Mr Varuhas put it on the basis that at this stage the Director-General is taking an educative approach.' [11]
Jul 2, 2024	*Fluoride Action Network (NZ) Inc v Hastings District Council [2024] NZHC 1781.* Judgement of La Hood (Costs). Judge denies applicants submission that the general rule that costs follow the event should not be applied (under r 14.7(e) of the High Court Rules 2016, which provides that the Court has the discretion to refuse to make an order for costs if the "proceeding concerned a matter of public interest, and the party opposing costs acted reasonably in the conduct of the proceeding". Judge La Hood accepted the Director-General of Health and Attorney-General's submission that 'in reality the case reflected the special interests of their members. The proceeding was effectively another vehicle for groups that oppose fluoridation to challenge the Director-General's directions to local authorities to fluoridate their water supplies and to challenge the fluoridation of water in New Zealand more generally.' [5].' …' raising a Bill of Rights argument that is ultimately unsuccessful is insufficient to displace the ordinary rule that costs follow the event.' Costs awarded to Hastings District Council ($20,470.40) and the Director General of Health and Attorney-General ($20,566.05).
2024	*Vote Health (New Zealand Budget) 2024/2025*.

	- $6 million carried forward from 2022/23 to 2023/24 only for the implementation of the Fluoridation Capital Works Subsidies programme, reflecting rephasing of the programme. - $4.500 million carried forward from 2022/23 to 2023/24 only for the implementation of community water fluoridation, reflecting rephasing of the programme.
Aug, 2024	NTP *Monograph on the State of the Science Concerning Fluoride Exposure and Neurodevelopment and Cognition: A Systematic Review.* NTP Monograph 08. National Toxicology Program Public Health Service U.S. Department of Health and Human Services. • This review finds (moderate confidence) that higher estimated fluoride exposures (... drinking water fluoride concentrations that exceed WHO Guidelines for Drinking-water Quality 1.5mg/L of fluoride) are consistently associated with lower IQ in children • Associations between lower total fluoride exposure [e.g., as in approximations of exposure such as drinking water fluoride concentrations that were lower than the WHO Guidelines for Drinking-water Quality of 1.5 mg/L of fluoride (WHO 2017)] and children's IQ remain unclear. • However, because people receive fluoride from multiple sources (not just drinking water), individuals living in areas with optimally fluoridated water can have total fluoride exposures higher than the concentration of their drinking water. • Additional exposures to fluoride from other sources increase total F exposure. Mod. confidence conclusions may be relevant to people living in optimally fluoridated areas of the US depending on the extent of their additional exposures to F from sources other than drinking water. • Seven meta-analyses found statistically significant inverse associations between fluoride assessment measures and children's IQ. Many studies lacked the information necessary to evaluate study quality, and most used group-level estimates of fluoride exposure. • Although the use of various effect measures and methods makes comparison of the magnitude of the associations difficult across meta-analyses, there is a consistent reporting of inverse associations between fluoride exposure assessment measures and children's IQ. • 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. • Concludes: Recent meta-analyses of the inverse association between children's IQ and fluoride exposures provide additional evidence of a dose-response relationship. However, uncertainty remains in findings at the lower fluoride exposure range. • Concludes: As this body of evidence matures, consideration for upgrading the moderate confidence conclusion to high confidence based on

	additional evidence of dose-response relationships at lower fluoride levels may be warranted.
June 2025	Appeal by Director-General and the Attorney-General to Radich J judgment in New Health New Zealand Inc v Director-General of Health [2023] NZHC 3183 [Preliminary judgment]. The appeal is to be heard by a Full Bench of the Court of Appeal in June 2025.

Studies add to weight of evidence analysed by NTP and discussed in the US TCSA lawsuit. Continue to highlight that fluoride at low levels in drinking water is a cognitive neuro-developmental toxicant.	Malin AJ, Eckel SP, Hu H, et al. *Maternal Urinary Fluoride and Child Neurobehavior at Age 36 Months.* JAMA Netw Open. 2024;7(5):e2411987. doi:10.1001/jamanetworkopen.2024.11987 - findings suggest that prenatal fluoride exposure may increase risk of neurobehavioral problems among children living in an optimally fluoridated area in the US. Hall M, Lanphear B, Chevrier J, Hornung R, Green R, Goodman C, Ayotte P, Martinez-Mier EA, Zoeller RT, Till C. *Fluoride exposure and hypothyroidism in a Canadian pregnancy cohort.* Sci Total Environ. 2023 Apr 15;869:161149. doi: 10.1016/j.scitotenv.2022.161149. - Fluoride in drinking water was associated with increased risk of hypothyroidism in pregnant women. Adkins EA, Yolton K, Strawn JR, Lippert F, Ryan PH, Brunst KJ. *Fluoride exposure during early adolescence and its association with internalizing symptoms.* Environ Res. 2022 Mar;204(Pt C):112296. doi: 10.1016/j.envres.2021.112296. Epub 2021 Oct 29. - Study links fluoride exposure and internalizing symptoms, specifically somatization. Goodman, C.V.; Hall, M.; Green, R.; Chevrier, J.; Ayotte, P.; Martinez-Mier, E.A.; McGuckin, T.; Krzeczkowski, J.; Flora, D.; Hornung, R.; et al. *Iodine Status Modifies the Association between Fluoride Exposure in Pregnancy and Preschool Boys' Intelligence.* Nutrients 2022, 14, 2920. DOI 10.3390/nu14142920 - Iodine intake during pregnancy may minimise fluoride's neurotoxicity in boys. Ruehlmann AK, Cecil KM, Lippert F, Yolton K, Ryan PH, Brunst KJ. *Epigenome-wide association study of fluoride exposure during early adolescence and DNA methylation among U.S. children.* Sci Total Environ. 2024 Jul 20:174916. doi: 10.1016/j.scitotenv.2024.174916. Epub ahead of print. PMID: 39038671. - Higher concentrations of urinary fluoride associated with differential methylation of specific genes regulating key developmental processes.