

# The risks of fluoridation to babies in the womb

Fluoridation of public water supplies could effectively become compulsory in Aotearoa New Zealand. A bill before Parliament proposes that district health boards (rather than councils) be made responsible for water fluoridation.

We all want good dental health, but a number of recent studies show reduced cognitive ability in children who were exposed to fluoride in the womb. **Dr John Christie** asks: how safe is fluoridation?

In August 2019 the journal *JAMA Pediatrics* published the results of a study of Canadian women and their young children which found a significant negative association between the mothers' fluoride exposure during pregnancy and the IQ of their children at age four (Green 2019).

Translated to New Zealand (Cressey 2010) the results imply an average IQ loss of about 4 points in non-fluoridated towns and cities, where tea is the main source of fluoride (e.g. Christchurch), and 9 in those with fluoridated drinking water, such as Auckland and Wellington.

## EXHAUSTIVE REVIEW PROCESS

The study analysed fluoride exposure and IQ data from a Canadian government-funded project, Maternal-Infant Research on Environmental Chemicals (MIREC). Because of its controversial topic, the manuscript was sent to a large number of reviewers in Canada's public health agencies. This elicited over 200 critiques, each of which had to be addressed before MIREC would allow the paper to be submitted for publication. After acceptance by *JAMA Pediatrics* it went through several additional rounds of review by the *JAMA* editors until a compromise was reached 'that reflected the strength of the evidence, as well as [its] implications for public health' (Till 2020b).

This level of pre-examination is extraordinary; normally papers are submitted directly to scientific journals and undergo three reviews only. But, as the authors noted, the quality of the paper improved as a result.

Publication triggered a flood of attacks, mostly from dental-related and industry-funded groups. Many of the critics had clearly not read the paper, or done so only cursorily, and in a letter signed by 30 health and dental professionals the authors were falsely accused of refusing to release their data.

## NOT AN ISOLATED STUDY

In the last four years several high-quality studies showing an association between prenatal exposures to fluoride and diminished cognitive abilities have been published (Bashash 2017, Valdez Jiménez 2017, Green 2019, Till 2020a).

All studies that have measured foetal exposure to fluoride have found such an effect (Grandjean 2020). A 2012 review of 27 earlier, mostly Chinese, studies found the average IQ in high fluoride areas was 6.75 points lower than in low fluoride areas (Choi 2012, Choi 2013).

Other recent studies have found increased fluoride exposure was associated with increased incidence of ADHD (Bashash 2018, Riddell 2019). Summarising the evidence, Harvard University's Professor Philippe Grandjean concluded in a recent review 'there is little doubt that developmental neurotoxicity is a serious risk associated with elevated fluoride exposure, whether due to community water fluoridation, natural fluoride release from soil minerals, or tea consumption, especially when the exposure occurs during early development' (Grandjean 2019).

## PERMANENT DAMAGE TO THE BRAIN

In an earlier paper Grandjean explained in *The Lancet* that neurotoxic damage is likely to be permanent: 'The developing human brain is inherently much more susceptible to injury caused by toxic agents than is the brain of an adult... Because of the extraordinary complexity of human brain development, windows of unique susceptibility to toxic interference arise that have no counterpart in the mature brain or in any other organ. If a developmental process in the brain is halted or inhibited, there is little potential for later repair, and the consequences can therefore be permanent.' (Grandjean 2006)

The *JAMA Pediatrics* paper (Green 2019) reports that lower IQs are *associated* with, rather than caused by fluoride exposure. This is because it is difficult in epidemiology (population health studies) to

prove causation. Commonly the likelihood of causation is assessed using the Bradford Hill criteria, named after the British statistician who described them to the Royal Society of Medicine in 1964.

Grandjean, an expert neurotoxicologist, recently judged fluoride exposure to meet 8 of the 9 criteria (Grandjean 2020). The ninth criterion, specificity, supports causation if it exists but does not rule it out if not, as Bradford Hill himself pointed out (Hill 1965). Specificity would exist here if IQ losses were associated with fluoride exposure and nothing else.

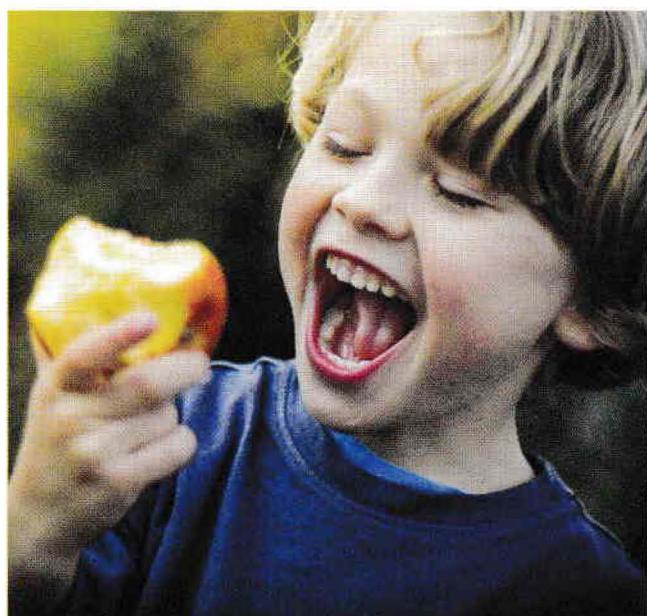


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## Good dental health through diet

The Soil & Health Association is opposed to the artificial fluoridation of public water supplies in New Zealand, and believes that dental health is best achieved through a healthy diet and eating fresh, wholesome organic foods. Minimise or avoid sugary foods and drinks (including fruit juice), and processed and refined foods. Fresh fruit is better for your teeth than dried fruit, and carrot sticks are great as a healthy snack.

**The developing human brain is much more susceptible to injury caused by toxic agents than is the brain of an adult.**

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### SO WHAT SHOULD WE DO?

The available evidence suggests that the current fluoride exposure levels in New Zealand are causing brain damage in children. This affects about one third of the current population.

The Canadian paper was published over 17 months ago now. In this time there have been more than 80,000 births in New Zealand – many more babies at risk – and there is still no response from the Ministry of Health (MOH).

So we all have to take matters into our own hands. The advice from both the authors of the Canadian study (Green 2019) and the editor of *JAMA Pediatrics* (Christakis 2019) is for pregnant women to minimise fluoride intake. Since rapid brain development continues up to age five, parents should minimise intake by young children.

Most important is to cease drinking fluoridated water and tea. It is especially important not to use fluoridated water in infant formula (Till 2020a) or to use infant foods containing fluoridated water. Fluoride intake can be further reduced by not eating foods such as bread made using fluoridated water (Cressey 2010). If possible, buy products from non-fluoridated areas such as Christchurch. Intake from fluoride toothpastes is negligible for adults but it would be prudent for children to use non-fluoridated toothpaste.

Fluoride avoidance is necessary because the evidence of neurotoxic danger is strong and the consequences very serious. In contrast the evidence for dental benefit from water fluoridation is weak (NHS 2000, Schluter 2020), and whereas dental decay can be treated (preferably in fact prevented, through a healthy diet and good dental hygiene), brain damage cannot.

### MORE EFFECTIVE SOLUTIONS

The Health (Fluoridation of Drinking Water) Amendment Bill, introduced by the previous National government and now being promoted by Andrew Little, would give district health boards (rather than councils) the power to order fluoridation of water supplies. Since DHBs must implement MOH policies, the bill amounts to compulsory fluoridation.

A sugar tax and eliminating poverty would be much more effective than fluoridation and would also avoid the risk of brain damage.



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This is very shortsighted. An analysis of MOH data for 275,843 four-year-old children found that community water fluoridation (CWF), if implemented throughout New Zealand, would have reduced the incidence of severe dental decay in those children from 41,360 to 39,044 (Schluter 2020). In other words, CWF would reduce severe dental decay in 2316 children – but would still leave a further 39,044 children with severe dental decay.

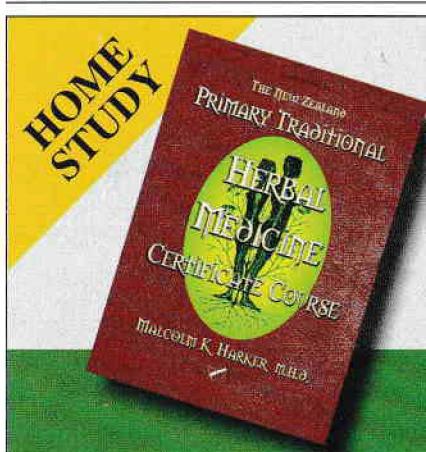
### Key precautions for pregnant women and young children

(Till 2019)

- Avoid fluoridated water
- Minimise consumption of tea

Precautions should continue as long as possible. The brain develops rapidly up to age two, expands another 10% by age five and is now known to continue developing past age 20 (Lenroot 2006).

All types of tea (black, green, white and oolong) contain relatively high concentrations of fluoride, but actual amounts vary according to the source, the highest from Kenya, lowest from Sri Lanka. Fluoride intake also varies with the method of preparation; the common Chinese practice of discarding the first infusion reduces fluoride intake by 80% (Waugh 2017).



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## References

- Bashash, M et al. 2017. Prenatal fluoride exposure and cognitive outcomes in children at 4 and 6–12 years of age in Mexico. *Environmental Health Perspectives* 125, 097017.
- Bashash, M et al. 2018. Prenatal fluoride exposure and attention deficit hyperactivity disorder (ADHD) symptoms in children at 6–12 years of age in Mexico City. *Environ. Int.* 121, 658–666.
- Choi, A et al. 2012. Developmental fluoride neurotoxicity: A systematic review and meta-analysis. *Environmental Health Perspectives* 120, 1362.
- Choi, A et al. 2013. Developmental fluoride neurotoxicity: Choi et al. respond. *Environmental Health Perspectives* 121, a70.
- Christakis, M. 2019. Quoted in 'Is Fluoride in Drinking Water Safe? A New Study Reignites a Long-Standing Debate', *Time* 20 Aug 2019.
- Cressey, P et al. 2010. Estimated dietary fluoride intake for New Zealanders. *Journal of Public Health Dentistry* 70, 327.
- Grandjean, P et al. 2006. Developmental neurotoxicity of industrial chemicals. *The Lancet* 368, 2167.
- Grandjean, P. 2019. Developmental fluoride neurotoxicity: An updated review. *Environmental Health* 18, 110.
- Grandjean, P. 2020. *Food and Water Watch*, et al. v. U.S. EPA, *Expert Declaration of Philippe Grandjean, MD, MSc*. Report No. 198-3, US Federal Court.
- Green, R et al. 2019. Association between maternal fluoride exposure during pregnancy and IQ scores in offspring in Canada. *JAMA Pediatrics* 173, 940.
- Hill, AB. 1965. The environment and disease: Association or causation? *Proc. R. Soc. Med.* 58, 295.
- Lenroot, RK et al. 2006. Brain development in children and adolescents: Insights from anatomical magnetic resonance imaging. *Neuroscience & Biobehavioral Reviews* 30, 718.
- NHS Centre for Reviews and Dissemination 2000. A systematic review of public water fluoridation. University of York.
- Riddell, JK et al. 2019. Association of water fluoride and urinary fluoride concentrations with attention deficit hyperactivity disorder in Canadian youth. *Environment International* 133, 105190.
- Rugg-Gunn, A. 2001. Preventing the preventable: The enigma of dental caries. *British Dental Journal* 191, 478.
- Schluter, PJ et al. 2020. Association between community water fluoridation and severe dental caries experience in 4-year-old NZ children. *JAMA Pediatr.* 174, 969.
- Sivignon, C. 2021. Government considers water fluoridation policy, says Andrew Little. *Stuff*. 22 Jan 2021.
- Till, C 2019. Ways for pregnant women to reduce fluoride exposure. This is a flyer by one of the senior authors of [Green 2019]. [Till 2020a] Till, C et al. 2020. Fluoride exposure from infant formula and child IQ in a Canadian birth cohort, *Environment International* 134, 105315.
- [Till 2020b] Till, C et al. 2020. The evolving science of fluoride: When new evidence doesn't conform to existing beliefs. *Pediatr. Res.* 22.05.2020.
- Valdez Jiménez, L et al. 2017. In utero exposure to fluoride and cognitive development delay in infants. *Neurotoxicology* 59, 65–70.
- Waugh, DT et al. 2017. Black tea source, production, and consumption: Assessment of health risks of fluoride intake in New Zealand. *Journal of Environmental and Public Health* 2017, 5120504.

Since the cause of dental decay is sugar (Rugg-Gunn 2001), a sugar tax would be much more effective and would also avoid the risk of brain damage. Tooth decay rates are also strongly associated with poverty; its elimination, also, would have a much greater beneficial impact than fluoridation.

## HEED THE SCIENCE

Andrew Little recently said: "Let's challenge those who want to ignore the science" (Sivignon 2021). I completely agree. The science says water fluoridation has an uncertain and probably small benefit, and that the risk of permanent brain damage in very young children is high. This is science that should not be ignored.

It would be very useful to talk to your local MP – show him or her a copy of this article, with its references. The listed scientific journals are of the highest quality – they do not publish 'junk science'. ☐

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- NHS Centre for Reviews and Dissemination 2000. A systematic review of public water fluoridation. University of York.
- Riddell, JK et al. 2019. Association of water fluoride and urinary fluoride concentrations with attention deficit hyperactivity disorder in Canadian youth. *Environment International* 133, 105190.
- Rugg-Gunn, A. 2001. Preventing the preventable: The enigma of dental caries. *British Dental Journal* 191, 478.
- Schluter, PJ et al. 2020. Association between community water fluoridation and severe dental caries experience in 4-year-old NZ children. *JAMA Pediatr.* 174, 969.
- Sivignon, C. 2021. Government considers water fluoridation policy, says Andrew Little. *Stuff*. 22 Jan 2021.
- Till, C 2019. Ways for pregnant women to reduce fluoride exposure. This is a flyer by one of the senior authors of [Green 2019]. [Till 2020a] Till, C et al. 2020. Fluoride exposure from infant formula and child IQ in a Canadian birth cohort, *Environment International* 134, 105315.
- [Till 2020b] Till, C et al. 2020. The evolving science of fluoride: When new evidence doesn't conform to existing beliefs. *Pediatr. Res.* 22.05.2020.
- Valdez Jiménez, L et al. 2017. In utero exposure to fluoride and cognitive development delay in infants. *Neurotoxicology* 59, 65–70.
- Waugh, DT et al. 2017. Black tea source, production, and consumption: Assessment of health risks of fluoride intake in New Zealand. *Journal of Environmental and Public Health* 2017, 5120504.



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