

## Four myths about water fluoridation and why they're wrong

Written by Matthew Hopcraft, Clinical Associate Professor, Melbourne Dental School, University of Melbourne

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Adding fluoride to tap water to prevent tooth decay is one of our greatest public health achievements. Yet, myths persist about whether it's safe and works. [from](#) [www.shutterstock.com](http://www.shutterstock.com)

Evidence gathered over 60 years about adding fluoride to drinking water has failed to convince some people this major public health initiative is not only safe but helps to prevent tooth decay.

Myths about fluoridated water persist. These include fluoride isn't natural, adding it to our water supplies doesn't prevent tooth decay and it causes conditions ranging from cancer to Down syndrome.

Now the National Health and Medical Research Council (NHMRC) is in the process of [updating its evidence](#) on the impact of fluoridated water on human health since it last issued a statement on the topic in 2007.

Its [draft findings and recommendations](#) are clear cut:

NHMRC strongly recommends community water fluoridation as a safe, effective and ethical way to help reduce tooth decay across the population.

It came to its conclusion after [analysing the evidence](#) and issuing a [technical report](#) for those wanting more detail.

Here are four common myths the evidence says are wrong.

### 1. Fluoride isn't natural

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[Fluoride](#) is a naturally occurring substance found in [rocks that leaches into groundwater](#) ; it's also found in surface water. The natural level of fluoride in the water varies depending on the type of water (groundwater or surface) and the type of rocks and minerals it's in contact with.

Fluoride is found in all natural water supplies at some concentration. Ocean water contains fluoride at around [1 part per million](#) , about the same as levels of [fluoridated drinking water](#) in Australia.

There are many places in Australia where fluoride occurs naturally in the water supply at optimum levels to maintain good dental health. For example, both [Portland and Port Fairy](#) in Victoria have naturally occurring fluoride in their water at 0.7-1.0 parts per million.

The type of fluoride commonly found in many rocks and the source of the naturally occurring fluoride ion in water supplies is [calcium fluoride](#) .

The [three main fluoride compounds](#) generally used to fluoridate water are: [sodium fluoride](#) , [hydrofluorosilicic acid](#) ( [hexafluorosilicic acid](#) ) and sodium silicofluoride. All these fully mix (dissociate) in water, resulting in the availability of fluoride ions to prevent tooth decay.

So regardless of the original compound source, the end result is the same – fluoride ions in the water.

## 2. Fluoridated water doesn't work

Evidence for water fluoridation dates back to [US studies in the 1940s](#) , where dental researchers noticed lower levels of tooth decay in areas with naturally occurring fluoride in the water supply.

This prompted a [study involving the artificial fluoridation](#) of water supplies to a large

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community, and comparing the tooth decay rates to a neighbouring community with no fluoride.

The trial had to be discontinued after six years because the benefits to the children in the fluoridated community were so obvious it was deemed unethical to not provide the benefits to all the children, and so the control community water supply was also fluoridated.

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Further reading: [How fluoride in water helps prevent tooth decay](#)

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Since then, consistently we see lower levels of tooth decay associated with water fluoridation, and the most recent [evidence](#), from Australia and overseas, supports this.

The [NHMRC review](#) found children and teenagers who had lived in areas with water fluoridation had 26-44% fewer teeth or surfaces affected by decay, and adults had 27% less tooth decay.

A number of factors are likely to influence the variation across populations and countries, including diet, access to dental care, and the amount of tap water people drink.

### 3. Fluoridated water causes cancer and other health problems

The NHMRC [found](#), there was reliable evidence to suggest water fluoridation at current levels in Australia of 0.6-1.1 parts per million is *not* associated with: cancer, Down syndrome, cognitive problems, lowered intelligence, hip fracture, chronic kidney disease, kidney stones, hardening of the arteries, high blood pressure, low birth weight, premature death from any cause, musculoskeletal pain, osteoporosis, skeletal fluorosis (extra bone fluoride), thyroid problems or other self-reported complaints.

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Further reading: [Why do some controversies persist despite the evidence?](#)

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This confirms [previous statements](#) from the NHMRC on the safety of water fluoridation, and statements from international bodies such as the [World Health Organisation](#), the [World Dental Federation](#), the [Australian Dental Association](#) and the US [Centers for Disease Control and Prevention](#).

Most [studies](#) that claim to show adverse health effects report on areas where there are high levels of fluoride occurring naturally in the water supply. This is often more than 2-10 parts per million or more, up to 10 times levels found in Australian water.

These studies are also often not of the highest quality, for example with [small sample sizes](#) and not taking into account [other factors](#) that may affect adverse health outcomes.

There is, however, evidence that fluoridated water is linked to both the amount and severity of [dental fluorosis](#). This is caused by being exposed to excess fluoride (from any source) while the teeth are forming, affecting how the tooth enamel mineralises.

Most [dental fluorosis in Australia](#) is very mild or mild, and does not affect either the function or appearance of the teeth. When you can see it, there are fine white flecks or lines on the teeth. Moderate dental fluorosis is very uncommon, and tends to include brown patches on the tooth surface. Severe dental fluorosis is rare in Australia.

## 4. Fluoridated water is not safe for infant formula

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Some people are concerned about using fluoridated water to make up infant formula.

However, all infant formula sold in Australia has very low levels of fluoride, below the threshold amount of 17 micrograms of fluoride/100 kilojoules (before reconstitution), which would require a [warning label](#)

Therefore, making up infant formula with fluoridated tap water at levels found in Australian (0.6-1.1 parts per million) is safe, and does not pose a risk for dental fluorosis. Indeed, [Australi an research](#) shows there is no association between infant formula use and dental fluorosis.

### A consistent message

Adding fluoride to tap water to prevent tooth decay is one of our greatest public health achievements, with evidence gathered over more than 60 years showing it works and is safe. This latest review, tailored to Australia, adds to that evidence.

*Matthew Hopcraft has received research funding from the Australian Dental Research Foundation, Victorian Department of Human Services, Alzheimer's Australia, Dental Health Services Victoria, Google Australia and the Institute for a Broadband Enabled Society. He is affiliated with the Australian Dental Association (Victorian Branch), SugarFree Smiles and SugarByHalf.*

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