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## New Zealand drinking water should be fluoridated

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# NO

The primary concerns with fluoridation are medical. It is therefore inappropriate that dentists continue to dominate this debate. This article primarily addresses some adverse medical effects from fluoridation. For the most comprehensive discussion of fluoridation to date, the reader is referred to: *The Case against Fluoride*.<sup>1</sup>

Fluorine is a common, inherently toxic element. Fluorine naturally presents as calcium fluoride in water supplies. Water fluoridation systems use either hydrofluorosilicic acid or derivative sodium hexafluorosilicate. These compounds have never been tested for human health safety.

Silicofluorides do not fully dissociate to form free fluoride ions in aqueous solution and revert to the silicofluoride ion in acid stomach conditions. The World Health Organization<sup>2</sup> states that 40% of ingested fluoride is absorbed through the stomach wall as molecular hydrofluoric acid (a known mutagen). This negates the ‘all fluoride ions are the same’ deception.

Tooth decay has decreased in all OECD communities, mostly unfluoridated, to essentially the same level since fluoridation was implemented, for a number of reasons. These include improved refrigeration, increased consumption of cheese, increased antibiotic use, increased socioeconomic status, and increased awareness of oral health. But the biggest reason in NZ is that the Ministry of Health directed school dental nurses to stop filling teeth unnecessarily. They stopped filling tiny surface enamel defects during the Hastings experiment, producing an overnight 25% reduction in ‘decay’, attributed to fluoridation in the report.<sup>3</sup> In 1976, they stopped drilling and filling perfectly healthy molars—a 64% reduction over five years.<sup>4</sup>

### The origins of fluoridation theory

The original belief was that fluoride had to be ingested to harden teeth during enamel formation. This was discredited in 1999.<sup>5</sup> Any significant effect from fluoride is topical, not systemic, through high fluoride concentrations (such as toothpaste), not through fluoridated water washing over the teeth during the day. The Centers for Disease Control and Prevention (CDC) acknowledges there is no evidence that fluoroapatite, while phys-

Atkin GM. New Zealand drinking water should be fluoridated—the ‘no’ case. *J Prim Health Care*. 2013;5(4):332–334.

ically harder than hydroxyapatite, is any more resistant to decay, and that fluoridated water is too weak to inhibit decay-causing bacteria.<sup>6</sup>

### Serious long-term adverse health effects from fluoridation

A 2012 report by environmental risk consultant, Declan Waugh, showed that across all major health conditions, the 70%-fluoridated Republic of Ireland had significantly higher disease rates than never-fluoridated Northern Ireland, often by several 100%.<sup>7</sup> The same was seen in the fluoridated versus unfluoridated OECD countries. The US National Research Council 2006 report showed a range of adverse health effects from fluoride, including at 1 part per million (ppm).<sup>8</sup>

### Chemical intolerance

Between 1 and 3% of the population have a chemical intolerance to fluoride.<sup>9,10</sup> This manifests in a range of conditions, including gastrointestinal problems and debilitating chronic fatigue.

### Neurotoxicity

As noted by the National Research Council in 2006, assessments of fluoride safety have relied on incomplete information on potential risks. In regard to developmental neurotoxicity, much information has been published but this has not been available to most expert committees:

The results suggest that fluoride may be a developmental neurotoxicant that affects brain development at exposures much below those that can cause toxicity in adults. (p.530)<sup>8</sup>

The recent Harvard review of IQ studies found that there was a genuine concern about developmental neurotoxicity. US Government data published by the CDC in 1993 shows a clear correlation between the rate of mental retardation in children and water fluoridation.<sup>11</sup> Shan and colleagues showed that fluoride reduces the number of nicotinic acetylcholine receptors in the brain.<sup>12</sup> Such reduction is found to be involved in a complex range of central nervous system disorders.

### Cancer

In the US court case of *Aitkenhead v Borough of West View*<sup>13</sup> it was found proven that fluoridation increased cancer rates by 5%. This finding has never been overturned.

Japanese research in Okinawa Prefecture showed that while water was fluoridated, there was 69.5% more uterine cancer in areas with an average of 0.2 to 0.4 ppm fluoride compared with areas with less than 0.03 ppm.<sup>14</sup> This difference reduced after fluoridation ceased. Confounders were allowed for with multivariate analysis.

In 2006, Dr Elise Bassin published high quality research showing that boys (but not girls) exposed to fluoridated water between the ages of 5 and 10 had 500% more osteosarcoma in their teens.<sup>15,16</sup> No study has ever refuted Bassin's findings,<sup>15</sup> as they look at total lifetime exposure or exposure at time of diagnosis, both of which are irrelevant. This equates to two osteosarcoma deaths per year in New Zealand (NZ).

### Arsenic

In 2000, the US National Sanitation Foundation released test results showing fluoridation chemicals typically add 0.43 parts per billion (ppb) arsenic to the finished water. Adjusting for NZ parameters, applying the EPA's risk factor (3.5 x 10<sup>-5</sup> deaths per 70 year lifetime per microgram arsenic per day), we would expect 1.1 extra lung and bladder cancer deaths per year in NZ due to the contaminated fluoridation chemicals used.

### Heart disease

A range of studies, using different modalities, has shown a correlation between fluoride and heart disease.<sup>17,18</sup> For example, a Japanese study showed children with dental fluorosis had a higher incidence of heart damage. Research published in January 2012 concluded that there was a direct correlation between the fluoride level in arteries, including coronary arteries, and atherosclerosis.<sup>19</sup> Following fluoridation's introduction in the US, deaths from heart attacks sky-rocketed in the fluoridated communities, compared with non-fluoridated ones.<sup>20</sup>

## Preterm births

Research by the State University of New York in 2009 showed women in fluoridated communities had a 15% higher incidence of preterm births, and that this rate was greater for poor non-white mothers. Further research also shows higher preterm birth rates and lower birth weights connected with fluoride.<sup>21</sup> Based on NZ statistics, we would expect at least 3.3 extra neonatal deaths per year just from extra extreme preterm births caused by fluoridation, disproportionately affecting Maori and Pacific.

## Conclusion

The physician can monitor patients for adverse effects of medical intervention. No-one responsible for fluoridation monitors the population for adverse effects of fluoridation, other than dental fluorosis, contrary to WHO recommendations; and they have a 'deny everything' approach to such independent research.

Paradoxically, those who fluoridation is claimed to most benefit, poor non-whites, not only receive little if any such benefit, as found by the York Review,<sup>22</sup> but are most at risk from fluoride's toxicity.

With two recent, comprehensive reviews of fluoridation by Hamilton City Council in 2013 and New Plymouth District Council in 2011 finding the scientific evidence against fluoridation convincing, and the extreme reaction recently seen, it is high time we had an open, transparent public national debate on fluoridation.

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