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# Fluoridated water - the pros and the cons

**In the Republic, approximately 73 per cent of the Irish population currently have fluoridated water supplies. The first water supplies to be fluoridated were Dublin's and Cork's, back in July 1964. At the time, issues of deprivation and unemployment made it difficult for many people to afford a healthy diet or fluoridated toothpaste, and public health campaigns around oral hygiene had yet to be instigated. The widespread availability of refined sugars in the mid-19th century had also contributed to an epidemic of dental disease.**

The issue of water fluoridation has long been a contentious one in this country. The controversial chemical is in the news again, as Northern Ireland's Health Minister Edwin Poots is considering adding fluoride to water in a bid to curb the rate of tooth decay in young people. Northern Ireland has the worst oral health in the UK and young people in the region have the worst rate of dental decay in western Europe. It is hoped that adding fluoride to Northern Ireland's water will lessen the incidence of tooth decay.

According to the Irish Dental Health Foundation, the introduction of water fluoridation in Ireland has resulted in a 70 per cent fall in the levels of tooth decay.

"Dental health surveys carried out by the State in 1963, 1984, 1989 and 1990 confirm that water fluoridation has had a major impact on the oral health of Irish children and adults," said a spokesperson. "However, dental decay has also declined in areas where there is no water fluoridation, the main reason being the widespread availability of fluoridated toothpastes. Unfortunately, in areas where the level of risk is high, with high frequency consumption of sweets and confectionery, the use of fluoridated toothpastes alone is insufficient to prevent dental decay," said the spokesperson from the Foundation.

In 1992, a study comparing the decay levels of 12-year-old children in Dublin and Glasgow – where diet and lifestyle risk factors are similar – showed the level of decay was 45 per cent lower in Dublin, which has fluoridated water, compared to Glasgow, which is non-fluoridated. A recent publication comparing the decay levels for five- to seven-year-old children in 23 European countries also showed that Ireland has the lowest level of decay for this age group.

The Dental Health Foundation says that Ireland will need to continue to fluoridate its water because the level of risk in the Irish population for dental decay is still very high.

"Along with Scotland, Ireland is the worst of 17 European countries for the amount of sweets and confectionery being consumed by children and adolescents. Fluoride toothpaste use is insufficient to ensure good oral health – it is helpful, but not as effective as water fluoridation," said the spokesperson. "In addition, less than 50 per cent of Ireland's adolescent boys are brushing their teeth more than once a day with fluoride toothpaste, which will not help to protect them against tooth decay."

Water fluoridation schemes are employed in 40 countries, including Canada, Israel, New Zealand, Singapore, Spain and Switzerland. Currently about 60 per cent of the population in the United States and 65 per cent of Australians drink fluoridated water. Although countries such as Belgium, France and Germany fluoridate their salt supplies instead, Ireland is the only democracy with a mandatory national water fluoridation programme.

According to the Dental Health Foundation, the main side effect of water fluoridation is dental fluorosis. This is a form of discolouration of tooth enamel and is a well-recognised condition and is an indicator of overall fluoride absorption, whether from natural sources, fluoridated water or the inappropriate use of fluoride toothpaste at a young age.

"The type of fluorosis produced by water fluoridation at one part per million is almost undetectable to the untrained eye," said the spokesperson. "More severe forms

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of fluorosis are most definitely caused by young children swallowing too much fluoride toothpaste." Dental fluorosis only occurs when younger children consume too much fluoride, from any source, over long periods when teeth are developing under the gums. Only children aged eight years and younger can develop dental fluorosis, because this is when permanent teeth are developing under the gums.

**SIDE EFFECTS**

Other organisations, however, claim that fluoride has more side effects, with serious consequences for public health.

Dr Elizabeth Cullen, of the Irish Doctors Environmental Association (IDEA), said that dental decay was caused by poor diet, including excess dietary sugar and inadequate dental hygiene, not by a lack of fluoride.

"Fluoride is a potentially toxic chemical and the difference between safe and toxic levels of fluoride is small, even for healthy people. It was classified as a 'pollutant' by the EU Scientific Committee on Toxicity and Ecotoxicity in 2003. Adding it to drinking water contravenes the EU Drinking Water Directive, which was due to be implemented in December 2003. Article 4.2 of the Directive prohibits Member States from adopting measures leading to 'any increase in the pollution of waters used for the production of drinking water'. Some individuals are believed to be more vulnerable to the toxic effects of the chemical, for example young children and people with poor kidney function."

Adding fluoride to drinking water means that a person's actual daily intake is unknown, claims the IDEA. The Association says that an individual's intake varies, as it depends on the amount of water a person consumes each day. Other variable amounts of fluoride are absorbed from toothpaste and foodstuffs in which it is present. Furthermore, babies and people with dentures are given this medication regardless of 'need'.

No information is available about the base-line levels of fluoride in the Irish population before fluoridation was commenced, according to the IDEA. Fluoride accumulates in the body, so that base-line levels for the chemical will already have risen in the population in areas where fluoridation was occurring.

"The IDEA believes that there are already too many chemicals in our environment without adding more. Ireland should now stop adding fluoride to its water supplies. Instead, the country should promote improved nutrition and dental hygiene as a more common-sense approach to improving dental health, while strenuously attempting to eliminate or reduce social inequity."

**RESEARCH FINDINGS**

A study published in February of this year makes for uncomfortable reading. The research, called 'Human Toxicity, Environmental Impact and the Legal Implications of Water Flouridation', was carried out by Declan Waugh, a chartered water manager and environmentalist, who is also an environmental scientist. He found that the benefit of fluoride for dental decay has been proven to be by the application of fluoride toothpaste onto the enamel of the tooth – not by the ingestion of fluoride into the body and the interaction of fluoride in blood plasma with the developing teeth of children.

"The most recent investigations of fluoride and water fluoridation have documented the growing weight of toxicological and epidemiological evidence that there is a clear public health risk associated with the addition of fluoride to public drinking water supplies," said Waugh.

"Fluoride is now known to be a risk factor in developing many of the most serious health problems prevalent in the population of Ireland. This includes neurological and cardiovascular disease, type II diabetes, osteoporosis, hypercalcemia, sarcoidosis, skeletal fluorosis, skeletal muscular disorders and pediodontal disease."

The incidence of these diseases in Ireland is far above the global average, according to the research.

"Fluoride inhibits AdoHydrae and homocysteine metabolism, which is linked to cardiovascular disease, atherosclerotic disease, congenital heart defects, Downs' syndrome, neurodegenerative disorders including depression, schizophrenia, bipolar disorder, epilepsy, behavioural disorders, Alzheimer's disease and carcinogenesis," said Waugh.

"Research has recently found an inverse association between fluoride in drinking water and decreased intelligence in children. Fluoride has been found to depress melatonin synthesis in the pineal gland and induce accelerated sexual maturity in both humans and animals. Fluoride has profound effects on the skeleton. It has been found to cause decreased cortical bone mineral density, poor bone quality, increased skeletal

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fragility, osteomalacia, rickets, periodontal disease, osteoporosis, osteoporotic hip fractures and is positively associated with rheumatoid arthritis, bone pain and proximal myopathy."

It is not beyond consideration that Ireland's high rate of osteoporosis may be linked to fluoridation, according to the report. Over 300,000 people in Ireland over the age of 50 have osteoporosis and over 50 patients die each year in Ireland from complications resulting from osteoporotic hip fractures. Compared to Northern Ireland, where the water is fluoride free, the level of hip replacements in the Republic is almost 12 times higher per head of population.

The 300-page report reviews 1,200 international studies. It concludes that fluoridation of drinking water supplies is having both a significant negative health and economic impact on consumers and wider society. The report has been submitted to both the Government and the European Commission for their consideration.

The Irish Expert Body on Flourides and Health, however, said the report contains a great number of allegations of ill health and potentially damaging effects.

"Fundamentally the Expert Body maintains that there continues to be overwhelming evidence that water fluoridation significantly benefits dental health and through this, benefits overall health. The Expert Body is satisfied, having studied current peer reviewed scientific evidence worldwide, that water fluoridation causes no ill effects to the health of adults or children," said the Expert Body's appraisal.

For the moment, it would seem that there will be no change to Ireland's water supplies, any time soon.