

The Irish Expert Body on Fluorides and Health

An Corpán Oilte Éireannach um Fluairídí agus Sláinte

FLUORIDE AND PUBLIC HEALTH

FLUORIDE CONTRIBUTES TO ORAL AND OVERALL HEALTH

Fluoride plays an important role in improving overall health amongst the population by reducing the occurrence of dental caries (decay). Dental caries has been shown to have a negative impact on the quality of life, psychological and social aspects of children's lives. As such, healthcare professionals play a pivotal role in clarifying for members of the public the safety of fluoride and its important influence in preventing dental caries and thereby improving overall health.

In Ireland, water fluoridation plays a key role in counterbalancing the effects of poor tooth brushing habits and increasing rates of snacking on sugary foods and drinks amongst the Irish population, in particular amongst children and teenagers. As an Irish public health policy for over 40 years, water fluoridation has resulted in a reduction of over 80 per cent in decayed, missing (extracted) and filled teeth (DMFT) in Ireland for 12 year-old children living in areas supplied by fluoridated drinking water.[^] The DMFT is a measure of the total dental caries experience to date in the permanent teeth. The teeth of 12 year-olds are used in order to facilitate valid comparisons over time and geography. Recent evidence and studies confirm that the beneficial effects of water fluoridation continue.



Fluoride is an integral component of public health policy in Ireland

1. What is water fluoridation?

Water fluoridation is the adjustment of the natural concentration of fluoride in drinking water to the optimal recommended level for the prevention of dental caries.

2. How much fluoride is in drinking water in the Republic of Ireland?

As of July 1st 2007, the level of fluoride in drinking water in Ireland has been set at between 0.6–0.8ppm. PPM means parts per million and is equivalent to milligrams per litre. This level of fluoride is deemed optimal for protecting the oral health of all age groups.

3. What role does fluoride play in oral health?

Fluoride plays a key role in preventing dental caries and works in two ways – systemically and topically. By reducing dental caries, fluoride assists in improving overall oral health and therefore general health.

4. How does fluoride help prevent tooth decay?

Dental caries develops when sugar-containing foods are metabolised by bacteria in the mouth, resulting in acid on the tooth surface. This removes minerals from the tooth enamel and can lead to dental caries. As a topical effect, fluoride in saliva interacts with the minerals on the tooth surface to replace all the lost enamel and so prevents dental caries. Fluoride at an optimal level in the water supply provides the ideal, constant “repair kit” for teeth.

As fluoride protects both developing (i.e. pre-eruption) and erupted teeth against caries, it benefits individuals of all ages. As a systemic effect, the presence of fluoride in the pre-eruptive phase leads to structural improvements that render the tooth more resistant to later acid attack, i.e. after the tooth erupts into the mouth.

Fluoridation of community water supplies is an effective way to deliver fluoride to all members of the community, regardless of age and socio economic status

5. What is the role of fluoride in overall health?

By reducing the amount of dental caries in both children and adults, fluoride plays a role in counter-balancing the negative health implications associated with increased levels of dental caries. Adverse effects from dental caries include effects on general health while both dental caries and its treatment adversely impact on psychological and social aspects of children's lives.

6. Why does Ireland need fluoridated drinking water?

Water fluoridation is essential to counter-balance the acknowledged poor tooth brushing habits and higher rates of snacking on sugary foods and drinks, where Irish children and teenagers rank poorly compared with their European counterparts. Oral health surveys in Ireland since the 1960s have clearly demonstrated the benefits of Ireland's water fluoridation policy for everybody in society, irrespective of their economic circumstances.

7. Has water fluoridation been successful in Ireland?

Yes. Overwhelming evidence exists to show the effectiveness of water fluoridation as a method to prevent dental caries. Data shows that there have been greatly reduced levels of dental caries, as measured by average numbers of decayed, missing and filled teeth (DMFT) in Ireland for children living in areas supplied by fluoridated drinking water in comparison to those residing in non-fluoridated areas.

8. What would happen if water fluoridation ceased as a public policy in Ireland?

The nation's dental health would deteriorate over time if water fluoridation stopped.

9. What are the side effects of water fluoridation?

The balance of scientific evidence worldwide suggests that water fluoridation at the optimal level does not cause any ill health effects. Water fluoridation is one of the most widely studied public policy initiatives in the world with approximately 350 million people in some 60 countries globally residing in areas served by optimally fluoridated water supplies. There are no known side effects of water fluoridation other than dental fluorosis, in Ireland it occurs almost entirely at the, very mild to mild level, characterised by faint white flecks on the surface of teeth. Fluorosis has been known as a cosmetic condition for a long time and it is often only detectable by a dentist.

10. Is there an issue with using fluoridated tap water to reconstitute infant formula?

No. Fluoridated drinking water has been shown to be safe for use in preparing infant formula. Health professionals should continue to advise that infant formula should be reconstituted with boiled tap water rather than bottled water. Bottled waters are unsuitable for reconstituting infant formula due to high concentrations of sodium and other mineral ions which may be harmful to an infant over prolonged periods of usage. The Expert Body considers that fluoride concentrations in Irish tap water pose no known medical problems for infants or the population in general.

11. Is there a need for water fluoridation given the availability of fluoridated toothpastes in Ireland?

Irish tooth brushing habits are not in line with the rest of Europe. They compare poorly. As such water fluoridation helps to ensure the nation's oral health is maintained. Healthcare professionals should encourage parents to establish good tooth brushing habits with their children from the outset. Good habits started at an early age are of significant benefit to children as they grow into adulthood. The Expert Body advises the following:

From 0 until 2 years old

- Start to clean a baby's teeth as soon as the first tooth appears.
- Brush a baby's teeth with a soft toothbrush and water only.
- *Do Not Use Toothpaste.*⁸

⁸Professional advice on the use of fluoride toothpaste should be considered when a child below 2 years of age is thought to be at high risk of developing dental decay e.g. children with special needs.

From 2 until 7 years old

- Use a small pea-sized amount of fluoride toothpaste 1000-1500ppm. *(Paediatric toothpastes with low concentrations of fluoride (e.g. 500ppm) require further research before their use can be recommended).*
- Supervise brushing twice a day, in the morning and at night just before bedtime.
- A child under seven years needs help from an adult when brushing teeth.
- A child should never eat or swallow toothpaste.
- Clean the teeth thoroughly twice every day with fluoride toothpaste

12. Who regulates drinking water additives in Ireland?

The Health Services Executive is ultimately responsible for the fluoridation of water supplies. However, as the overall functions of sourcing, treatment and distribution of water for drinking rest with the sanitary authorities (borough corporations, county councils and urban district councils); the latter bodies undertake fluoridation on an agency basis.

The Expert Body has developed a detailed Code of Practice on the fluoridation of drinking water to ensure quality assurance across the delivery of water fluoridation. This Code sets standards and governs all quality systems and practices required for fluoride provision from storage, dosage, safety and technical aspects through to practical logistics.

A national audit of all fluoridation processes in water treatment plants in Ireland is about to be instigated. A baseline study to monitor the specific effects of amending the level of fluoride in water supplies in the Republic of Ireland is to be carried out. The study will be undertaken in a sample of optimally fluoridated (0.6 – 0.8ppm) areas in the Republic of Ireland.



FLUORIDE AND PUBLIC HEALTH – KEY FACTS

- Water fluoridation is one of the most widely studied public policy initiatives in the world.
- It is a public health policy in Ireland that is scientifically proven to benefit all members of society – regardless of socio-economic status.
- Dental caries and its treatment adversely affects general health and has a negative impact on both psychological and social aspects of children’s lives.
- Approximately 350 million people in some 60 countries globally, reside in areas served by optimally fluoridated water supplies.
- There has been a vast reduction in decayed, missing and filled teeth in Ireland for children living in areas supplied by fluoridated drinking water when compared with those residing in non-fluoridated areas.
- Dental fluorosis is the only known side effect of water fluoridation and results from consumption of excessive levels of fluoride at the time that the teeth are being formed, i.e., prior to eruption into the mouth. Dental fluorosis is a cosmetic rather than a health side-effect.
- In Ireland, the level of fluoride in the tap water is constantly regulated so that any dental fluorosis seen here is characterised only by faint white flecks on the surface of teeth, which in most cases is only detectable by a dentist.
- The effectiveness of water fluoridation in preventing dental decay continues to be endorsed by the World Health Organization, the Centre for Disease Control and Prevention U.S.A., the U.S. Public Health Service and the U.S. Surgeon General.
- Some countries opt to fluoridate their salt or milk, where water fluoridation is not feasible.

^aNorth South Survey of Children’s Oral Health in Ireland 2002

The Irish Expert Body on Fluorides and Health advises the Minister for Health and Children on research into all aspects of fluoride and its delivery methods while continuing to monitor new and emerging issues on fluoridation. The Expert Body has a broad representation from the areas of dentistry, public health medicine, engineering, management, environment, consumer interests and the public.

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