

Policy paper Health and Care Bill: water fluoridation

Published 19 July 2021

Contents

- Background
- Evidence of potential harm
- What the Bill will do
- How these provisions will help to improve public health

Print this page

Dr Niger Carter, Oral Health Foundation said:

“ We believe that water fluoridation is the single most effective public health measure there is for reducing oral health inequalities and tooth decay rates, especially amongst children. We welcome these proposals and believe they represent an opportunity to take a big step forward in not only improving this generation’s oral health, but those for decades to come.”

This fact sheet explains how the government plans to transfer responsibility for water fluoridation from local authorities to the Secretary of State.

Background

Evidence of benefit

Dental caries (tooth decay) is largely preventable. Those with dental caries can suffer pain and infection and often have difficulties eating, sleeping and socialising. It is a significant public health problem with levels of tooth decay in children that vary from nearly 32% of 5-year-olds in the North West to 18% in the South East of England^[footnote 1]. It is also a common cause of hospital admission of children, for the removal (extraction) of decayed teeth. There were approximately 37,000 such episodes for children aged 0 to 19 in 2019 to 2020. The cost of all tooth extractions for children aged 0 to 18 in hospitals is approximately £50 million per annum, the majority of which are due to avoidable tooth decay.

Fluoride is a naturally occurring mineral found in soil, food and drink and also in drinking water supplies, in varying amounts. In some parts of England the level of fluoride in the public water supply already reaches the target concentration of water fluoridation schemes (one milligram per litre (1mg/l)), sometimes expressed as one part per million (1ppm), as a result of the geology of the area. In other areas the fluoride concentration has been adjusted to reach this level as part of a fluoridation scheme.

The World Health Organization recommends a maximum level of 1.5 milligrams of fluoride per litre of water (mg/l)^[footnote 2]. This value is intended to maximise the oral health benefits, and be protective of public health, including dental mottling (fluorosis) which might be unsightly and in England is set out in the water supply (water quality) regulations for England^[footnote 3] and applies both to fluoridation schemes and fluoride naturally present in water.

Currently, around 6 million people in England live in areas with water fluoridation schemes, mainly in the West Midlands and the North East. Many schemes have been operating for over 50 years. Birmingham was the first permanent scheme to commence in 1964. Other countries with fluoridation schemes include the USA, Canada, Ireland, Spain and Brazil. It is estimated that, around 400 million people in some 25 countries are currently served by water fluoridation schemes. There are an additional 50 million people, worldwide, consuming water with naturally occurring fluoride at or around the same level as used in fluoridation schemes.

Studies since the 1930s have shown that access to fluoride in drinking water is associated with a reduced level of dental decay. Recent reviews of the scientific evidence published by authoritative bodies in England (2015)^[footnote 4], USA (2013)^[footnote 5], Canada (2019)^[footnote 6], Australia (2016)^[footnote 7] and New Zealand (2021)^[footnote 8] have concurred that fluoridated water confers significant dental health benefits. Public Health England (PHE) has recently summarised the evidence in an updated toolkit for local authorities^[footnote 9].

PHE’s 2018 health monitoring report compared the results of dental surveys of 5-year olds undertaken in fluoridated and non-fluoridated communities in England^[footnote 10]. The report found that there was a significant reduction in both the number of five-year-olds experiencing tooth decay and the number of teeth affected in areas with water fluoridation compared to non-fluoridated areas. The impact was also greater in more deprived areas, meaning that water fluoridation is successful in reducing oral health inequalities. A further benefit of water fluoridation over other approaches is that it does not rely on behaviour change, which is particularly important for children and vulnerable groups.

The effect of fluoridation on rates of hospital admission for tooth extraction is substantial, with the impact again being greatest for those from more deprived areas. PHE estimated that if all 5-year-olds in England drinking water with 0.2mg/l of fluoride instead received fluoridated water of at least 0.7mg/l then the number experiencing decay would fall by 17% in the least deprived areas, rising to 28% in the most deprived areas. At the same time, the number of estimated hospital admissions for tooth extractions due to decay would reduce by 45% to 68%.

There are also substantial benefits for adults. Studies suggest adults living in fluoridated areas may retain more teeth when compared to adults living in non-fluoridated areas and suffer less decay^[footnote 11] ^[footnote 12]. Studies in Australia have suggested that adults that spent more than 75% of their lives in fluoridated areas had around 10% fewer teeth and 30% fewer tooth surfaces affected by decay with greater impact being found in younger adults at greater risk of disease^[footnote 13] ^[footnote 14]. PHE’s 2014 health monitoring report included permanent (adult) teeth in children aged 12 and reported that that on average those in fluoridated areas were between 11% and 21% less likely to have had tooth decay than those in non-fluoridated areas^[footnote 15].

Based on PHE’s current return on investment tool for local authorities, water fluoridation also offers a return on investment after 5 years in areas of high deprivation of £35 for every £1 spent^[footnote 16].

Evidence of potential harm

There is an association between increasing levels of fluoride in water and the appearance of dental mottling, referred to as dental fluorosis. PHE’s 2018 health monitoring report describes a study of children undertaken living in fluoridated and non-fluoridated areas^[footnote 17]. The prevalence of fluorosis was greater in the fluoridated cities (61%) compared to the non-fluoridated cities (37%). However, there was no difference between children and young people surveyed in fluoridated and non-fluoridated cities when asked about their opinion on the appearance of their teeth, taking into account concerns which have resulted from any cause (for example - crowding, decay, trauma etc).

Previously, there have been suggestions that fluoridated drinking water may cause certain adverse effects, such as a rare form of bone cancer (osteosarcoma), Down’s syndrome or effects on the kidney. There have also been some more recent studies reporting associations between exposure to fluoride and adverse developmental neurological effects^[footnote 18] ^[footnote 19]. However, the evidence does not support this and various authoritative expert evaluations from different international organisations all agree that there is no convincing evidence that fluoride in drinking water at levels used in fluoridation schemes or at concentrations below the regulatory drinking water limit is harmful to general health^[footnote 20] ^[footnote 21] ^[footnote 22] ^[footnote 23] ^[footnote 24].

The Water Industry Act will maintain the duty on the Secretary of State to monitor and report on the effects of water fluoridation every 4 years.

What the Bill will do

Evidence supports water fluoridation as an effective public health measure that has the ability to benefit both adults and children, reduce oral health inequalities and offer a significant return on investment. There is also no evidence of health harms from the levels of fluoride used in English schemes, nor the slightly higher levels allowed naturally. Despite this, no new schemes have been implemented for nearly 40 years.

Since 2013 local authorities have had the responsibility, through the Water Industry Act 1991, to propose and consult on new fluoridation schemes and variations to or termination of existing schemes. Local authorities have, however, reported difficulties with the current process and there is the added complication that local authority boundaries are not coterminous with water flows. If the water supply crosses into neighbouring authorities it requires the involvement of several authorities in the development of schemes, which may be complex and burdensome.

In light of these challenges, the purpose of the water fluoridation clauses in the Bill is to give Secretary of State the power to directly introduce, vary or terminate water fluoridation schemes. **The revenue costs of the schemes would also transfer to the Secretary of State. This will allow central government to directly take responsibility for fluoridation schemes.** Any future decisions on new fluoridation schemes will be subject to funding being secured.

The Secretary of State will continue to be responsible for reimbursing water undertakers for costs associated with water fluoridation schemes, however the Bill provides the Secretary of State with a power to make regulations that could disapply this requirement in certain situations (to be specified in those regulations). Regulations made using this power would be subject to consultation and an affirmative resolution procedure to ensure there is appropriate scrutiny of any such proposal.

The Bill will also allow regulations to be made which would provide for future cost sharing with public sector bodies such as the NHS or local authorities. These regulations would be subject to consultation of any affected parties.

The Bill will also transfer the requirement from local authorities to the Secretary of State to consult water undertakers on whether any fluoridation scheme, or variation or termination to existing schemes are operable and efficient, prior to undertaking any public consultation.

The duty to consult on any future schemes will transfer to the Secretary of State and will allow for regulations to be made to provide more detail on the process and any requirements for consultation (and circumstances where consultation is not required). This will allow for consultations to be undertaken directly by central government.

The Bill will also allow for current water fluoridation arrangements held with water undertakers to be updated.

How these provisions will help to improve public health

The water fluoridation provisions in the Bill will streamline the process for the development of new fluoridation schemes and remove burdens from local authorities.

Our experience of the pandemic underlines the importance of a population health approach, informed by the evidence, supporting individuals and communities to improve their health, including their oral health. Water fluoridation is an effective and safe public health intervention recommended by the World Health Organisation that would benefit both adults and children, reduce oral health inequalities and a significant return on investment.

- Public Health England. [Oral health survey of 5-year-old children 2019](#) PHE Publications, Gateway no GW1175 [↗](#)
- World Health Organization (2017) [WHO Guidelines for drinking-water quality, fourth edition](#) and WHO 2006 [↗](#)
- Statutory Instrument 2016 no. 614 [The Water Supply \(Water Quality\) Regulations 2016 \(England\)](#). [↗](#)
- [Water fluoridation for the prevention of dental caries](#). Iheozor-Ejiofor Z, Worthington HE, Walsh T, O’Malley L, Clarkson JE, Macey R, Alam R, Tugwell P, Welch V, Glenny A. Cochrane Library 2015. [↗](#)
- Community Preventive Services Task Force. [Preventing Dental Caries: Community Water Fluoridation](#). Atlanta: Community Preventive Services Task Force 2013. [↗](#)
- CADTH. [Community Water Fluoridation Programs: A Health Technology Assessment- Review of Dental Caries and Other Health Outcomes](#). Ottawa: 2019. [↗](#)
- Jack B, Ayson M, Lewis S, et al. [Health Effects of Water Fluoridation. Evidence Evaluation Report](#). Canberra: National Health and Medical Research Council: 2016. [↗](#)
- [Health effects of water fluoridation: A review of the scientific evidence](#). Update on evidence The Royal Society of New Zealand, 2021. Fluoridation: an evidence update. Office of the Prime Minister’s Chief Science Advisor. [↗](#)
- Public Health England. [Water fluoridation health monitoring reports and water fluoridation toolkit](#). [↗](#)
- Public Health England. [Water fluoridation health monitoring report for England 2018](#). PHE Publications 2018. Gateway number: 2017777. [↗](#)
- Matsuyama Y, Listl S, Jürges H et al. Casual Effect of tooth Loss on Functional Capacity in Older Adults in England: A natural Experiment. J Am Geriatr Soc. 2021; May;69(5):1319-1327 [↗](#)
- Slade GD, Sanders AE, Do L, Roberts-Thomson K, Spencer AJ. [Effects of fluoridated drinking water on dental caries in Australian adults](#). Journal of Dental Research 2013;92:376-382. doi:10.1177/0022034513481190. [↗](#)
- Slade GD, Sanders AE, Do L, Roberts-Thomson K, Spencer AJ. [Effects of fluoridated drinking water on dental caries in Australian adults](#). Journal of Dental Research 2013;92:376-382. doi:10.1177/0022034513481190. [↗](#)
- Haysom L, Indig D, Byun R, Moore E, van den Dolder P. [Oral health and risk factors for dental disease of Australian young people in custody](#). Journal of Paediatrics and Child Health 2015;51:545-551. doi:10.1111/jpc.12761. [↗](#)
- Public Health England. [Water fluoridation health monitoring report for England 2014](#). PHE Publications 2014. Gateway number: 2013547. [↗](#)
- Public Health England. [Return on Investment Tool for local authorities 2016](#). PHE Publications 2016 Gateway number 2016321. [↗](#)
- Pretty IA, Bootham N, Morris J, MacKay L, Liu Z, McGrady M, Goodwin M. [Prevalence and severity of dental fluorosis in four English cities](#). Community Dental Health 2016;33:292-6. doi:10.1922/CDH_3930Pretty05. [↗](#)
- Bashash M, et al.. 2017. Prenatal fluoride exposure and cognitive outcomes in children at 4 and 6 to 12 years of age in Mexico. Environ Health Perspect. 2017 v 125(9). [↗](#)
- Green R, et al., Association between Maternal Fluoride Exposure During Pregnancy and IQ Scores in Offspring in Canada. JAMA Pediatrics, 2019. 173(10): p. 940-948. [↗](#)
- CADTH. [Community Water Fluoridation Programs: A Health Technology Assessment- Review of Dental Caries and Other Health Outcomes](#). Ottawa: 2019. [↗](#)
- Jack B, Ayson M, Lewis S, et al. [Health Effects of Water Fluoridation. Evidence Evaluation Report](#). Canberra: National Health and Medical Research Council: 2016. [↗](#)
- [Health effects of water fluoridation: a review of the scientific evidence](#). Update on evidence The Royal Society of New Zealand, 2021. Fluoridation: an evidence update. Office of the Prime Minister’s Chief Science Advisor. [↗](#)
- (European) [Scientific Committee on Health and Environmental Risks - SCHER \(2011\)](#) Critical review of any new evidence on the hazard profile, health effects, and human exposure to fluoride and the fluoridating agents of drinking water. [↗](#)
- Health Research Board (Ireland) (2015) Health effects of water fluoridation. An evidence review Health effects of water fluoridation. [↗](#)

Is this page useful?

Coronavirus (COVID-19) Brexit

Coronavirus (COVID-19): guidance and support [Check what you need to do](#)

Services and information Departments and policy

Benefits	Education and learning	How government works
Births, deaths, marriages and care	Employing people	Departments
Business and self-employed	Environment and countryside	Worldwide
Childcare and parenting	Housing and local services	Services
Citizenship and living in the UK	Money and tax	Guidance and regulation
Crime, justice and the law	Passports, travel and living abroad	News and communications
Disabled people	Visas and immigration	Research and statistics
Driving and transport	Working, jobs and pensions	Policy papers and consultations
		Transparency and freedom of information releases