

Appendix 8

a) Prof Paul Connett's report

b) Lord Reay's speech

a) Paul Connett, PhD., Director of Fluoride Action Network, sent the following press release in August 2021, it explains the weakness in the UK government's rationale with regard to water fluoridation.

UK Government Pushing Mandatory Fluoridation

The British Conservative Party is using primitive propaganda techniques to push mandatory fluoridation.

Even though, in the UK, government after government – of both parties – have endorsed water fluoridation, the practice has stalled, having reached only 10% of the population after several decades of trying. Prime Minister Thatcher could not move the needle, even after offering to indemnify water companies against financial liabilities. Efforts to fluoridate Northern Ireland failed miserably with 22 councils voting against the measure. Scotland too remains un-fluoridated and, instead, sports a cost-effective ChildSmile programme which has had greater success fighting dental decay in low income areas than fluoridated countries like New Zealand. Efforts over the last two decades to fluoridate Southampton, Manchester and Hull have all failed. Now comes Boris Johnson with an effort to introduce mandatory fluoridation for the whole of England. For the details, see the UK policy paper, Health and Care Bill: water fluoridation, from the Department of Health & Social Care.

Their rationale for doing so lacks scientific substance, however, and their dismissal of the US and Canadian government-funded studies on IQ are shoddy. Our well-informed supporters will cringe when they read the commentary in this Policy Paper on two of the IQ studies funded by the US National Institute of Environmental Health Sciences (NIEHS) in the section on the 'Evidence of potential harm' (see below). They will immediately realise that this is simply a crude piece of propaganda posing as scientific analysis. While our supporters will realise this, unfortunately in Britain and other fluoridating countries, many citizens will not, because the media is not keeping them informed about the Mother–Offspring fluoride studies performed in Mexico and Canada. I will summarise those findings and then show how crudely the British government paper uses sleight of hand to dismiss them.

Fluoride's neurotoxicity

To put the neurotoxicity issue into context, there has been an ever-growing body of peer-reviewed studies, beginning in the mid-1990s, that indicate that fluoride is neurotoxic. To date, 69 human studies, most from endemic fluorosis areas in China, have associated lowered IQ with fluoride exposure. Promoters of water fluoridation have dismissed the relevance of these studies (a) because of methodological limitations and (b) because many (but not all) of these findings occurred at higher fluoride concentrations than those used in water fluoridation programmes. Nevertheless, there has been general agreement that the findings have been remarkably consistent ([Choi et al., 2012](#)). Moreover, some of these studies have been very good, e.g. Xiang et al., (2003a, and 2003b) but, of course, that fact 'disappears' in the proponents' broad-brush dismissal of ALL the studies.

A very significant improvement in the quality of these studies occurred in 2017, when the first of four NIEHS-NIH (National Institutes of Health)-funded prospective-cohort studies were published ([Bashash and 2018](#); [Green 2019](#); and an infant study by [Till 2020](#)).

For the first time, the studies included measurements made in pregnant women and their offspring. This was important because fluoride is known to cross the placenta. Measurements of both exposure and outcome were made at the individual level (previously these were made at the community level, in so-called 'ecological' studies).

The study by [Till, 2020](#) showed that the infant brain is also very susceptible to damage from fluoride. It found a large reduction in children's IQ if, as infants, they were bottle-fed in communities which were fluoridated compared to children who, as infants, were bottle-fed in non-fluoridated communities.

Most importantly, the fluoride exposures in all these studies were at levels commonly experienced by pregnant women and children in fluoridated communities in Canada and the US, which adds fluoride at 0.7 ppm. The weight of evidence now strongly suggests that fluoride is capable of damaging both the foetal and the infant brain at very low levels.

Based upon Grandjean et al's [Benchmark Dose Analysis](#) (BMD), published in June 2021, offspring born to women exposed to fluoride doses commonly experienced in communities at 0.7 ppm would experience a loss of four to five IQ points. To put that into perspective at the population level, a shift downward of five IQ points halves the number of very bright children (IQ >130) and increases by 57% the number of children needing special care (IQ <70). Both changes have enormous social and economic ramifications for a large population in a country like the UK.

Mainly because of the large number of children being deliberately exposed to fluoridated water, "fluoride is causing a greater overall loss of IQ points today than lead, arsenic or mercury," according to Grandjean et al. (2021) in their [BMD](#) paper.

Not mentioned in the UK government paper are other recent studies published on other organs, tissues and body systems, for example a major prospective cohort study from Sweden demonstrates a higher risk of hip fractures in post-menopausal women associated with long-term exposure to natural fluoride at levels in water in the same range as the US fluoridates its water [[Helte et al., 2021](#)]. This is a very serious finding because it is well known that hip fractures in the elderly are debilitating, costly to treat, lead to a loss of independence and institutional care, and often shorten the life of those impacted. This finding also underlines the fact that fluoride can impact our health from womb to tomb, affecting the brains of the foetus and the bones of the elderly after lifetime exposure.

So, with that backdrop, here is how the UK government paper dismissed the health concerns of water fluoridation.

"Evidence of potential harm"

"... there have also been some more recent studies reporting associations between exposure to fluoride and adverse developmental neurological effects [[Bashash et al., 2017](#); and [Green et al., 2019](#)]. 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 [[Canada, 2019](#); [Australia, 2016](#); [New Zealand, 2021](#); [European, 2011](#); [Ireland, 2015](#)].

What's wrong with the UK-analysis?

1. The UK authors have not put this discussion into the larger context of a very large body of evidence of both [human](#) and [animal](#) studies that fluoride is neurotoxic.
2. In their discussion (or rather dismissal) of recent IQ studies, the UK authors failed to mention the very important study of [Till et al., 2020](#) discussed above. This was released in November 2019, some 20 months prior to this UK analysis. That is quite an omission. Scientists call this 'selective use of the literature' and, in this instance, it has been used to serve a political agenda.
3. Referring to the [Bashash, 2017](#) and [Green, 2019](#) findings, the UK authors use the vague sentence that the "evidence does not support this," without citing a single specific study of comparable rigor which refutes these findings.
4. When the authors switch to the claim about, "expert evaluations from different international organisations" to dismiss the importance of these two IQ studies, they do a very poor job.

The UK Policy Paper provides citations to five reviews from what they call 'international organisations' to support their cavalier dismissal of the NIEHS-funded [Bashash, 2017](#) and [Green, 2019](#) studies. Only one of these reviews comes from an international organisation (EU's SCHER); the other four come from government agencies within countries with a large percentage of their population drinking fluoridated water. Their reviews usually support government policies.

EUROPEAN – 2011. EU 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.

Note: The EU SCHER committee published its review in 2011 when only a small sample of the [69 IQ studies](#) were available. As far as the UK commentary is concerned, this review has no bearing on the quality of the Bashash, 2017 and Green, 2019 studies, since this review was published six and eight years before Bashash, 2017 and Green, 2019, respectively.

IRELAND – 2015. Health Research Board. Health effects of water fluoridation, an evidence review. Health effects of water fluoridation.

Note: This board was appointed by the Irish government which has enforced mandatory fluoridation in the country since the 1960s. Their review is irrelevant in terms of the UK commentary since it was published two and four years before Bashash, 2017 and Green, 2019, respectively.

AUSTRALIA – 2016. NHMRC. Jack B., Ayson M., Lewis S., et al. Health Effects of Water Fluoridation. Evidence Evaluation Report. National Health and Medical Research Council; 2016.

Note: The National Health and Medical Research Council (NHMRC) is part of the Australian government and it is generally felt that its role is to defend government policy on scientific matters. In this case, Australia is extremely pro-fluoridation with the largest percentage of their citizens drinking fluoridated water than any other large country, even the US. In this review; essentially a repeat of their review in 2007 which largely consisted of sections copied and pasted from the York Review ([McDonagh et al, 2000](#)), their reviews of IQ studies are poorly done. One example – in 2007 they excluded the [Xiang et al., 2003](#) study because they claimed it did not have a control population, which it certainly did. Again, this is all irrelevant because this review was published one and three years before Bashash, 2017 and Green, 2019, respectively.

CANADA – 2019. CADTH. Community Water Fluoridation Programs: A Health Technology Assessment-Review of Dental Caries and Other Health Outcomes. Ottawa; 2019.

Note: This is the first of the cited reviews in the UK paper that was published AFTER the Bashash, 2017 study was published. However, it was a very poor and biased review and it did not review the Bashash 2017 study. I was a member of an expert team invited to critique this review on behalf of Safe Water Calgary (see [July 2019 critique](#)). Safe Water Calgary suspected, probably correctly, that this review was rushed into press in order to influence a Council decision to re-fluoridate Calgary (a practice it stopped in 2011). But again, that is irrelevant to the UK's argument because this report does not examine either the Bashash 2017 or Green 2019 IQ studies.

NEW ZEALAND – 2021. Office of Prime Minister's Chief Science Advisor. Update on evidence The Royal Society of New Zealand, 2021. Fluoridation: an evidence update.

Note: Finally, we come to the only cited review that actually had something to say about Bashash, 2017 and Green, 2019. Before we say a few words about this commentary, it is important to understand the political context of this review. It appeared in time to provide some kind of scientific cover for the second attempt by the government to introduce mandatory fluoridation into NZ. This quote will give you an idea of how poor their understanding is of the literature on fluoride's neurotoxicity:

“Recent studies continue to show that, at very high levels and with chronic exposure, fluoride could potentially have negative neurodevelopmental and cognitive impacts. However, this is not a concern at levels used in fluoridation of water supplies in Aotearoa, New Zealand.”

This is nonsense. All the NIEHS funded studies discussed above (including [Bashash, 2017](#) ; [Green, 2019](#); [Till, 2020](#)) were done either in communities fluoridated at 0.7 ppm or where residents received equivalent doses from other sources (as measured in the fluoride levels in pregnant women's urine). The average level of fluoride in NZ's water is 0.85 ppm in fluoridated communities, making the potential for *more* IQ loss than in the US and Canada.

The review provides no critique of Bashash (2017) but they have this to say about the Green (2019) study:

“The study undertaken in Canada (Green et al. 2019) found that the mother's exposure to fluoride during pregnancy was associated with lower IQ scores in boys (but not girls), even at optimally fluoridated water levels (i.e. between 0.7–1.2mg/L). If this finding were replicated in robust studies, it would potentially be concerning as Aotearoa New Zealand recommends fluoridation of water between 0.7 and 1.0mg/L. There was significant and valid criticism of aspects of the study by many subject matter experts when it was released (see for example, 'expert reaction to study looking at maternal exposure to fluoride and IQ in children' (Science Media Centre 2019)). The study used sub-group analysis to find an association that is not explained in the paper (i.e. why were only boys affected¹⁰ and why verbal IQ was not impacted), the effect appeared to be driven by the minority of participants that had much higher fluoride exposures (i.e. higher than those in Aotearoa New Zealand).”

Note: None of these 'subject-matter experts' were specialists in neurotoxicology and were hastily gathered by the UK industry-friendly Media Centre for the purpose of deflecting concerns on the Green paper called, 'Advancing our health: Prevention in the 2020s', published in July 2019, which referred to only two (poor) Public Health England reports in 2014 and 2018, *which said, fluoridation is 'safe and effective.'* (Author's addition in italics).

The authors have responded to every single criticism of their paper, which included simplistic and inaccurate comments like: 'This is only one paper, we need more research'.

Then the NZ authors did what most promoters of fluoridation do when tackling the IQ studies: they compared it with a study done by [Broadbent et al.](#) in NZ in 2015. Comparing the methodology of Broadbent to that of Green is like comparing a molehill to a mountain. One only has to read the opening sentences of the Broadbent study to see how politically motivated it is on this issue. Broadbent complains that the fluoridation programme is being threatened by citizens who have grown alarmed about the IQ studies, mainly from China, citing a recent council meeting in Hamilton. Clearly the purpose of the paper was to dismiss these concerns. The paper was seriously flawed, and a recent draft review by the National Toxicology Program (NTP) gave it a low-quality ranking.

Here are some of its weaknesses:

1. There were no individual measurements of exposure to fluoride. The cohort and control were differentiated only in terms of community water level.
2. The sample sizes were hugely disproportionate: 99 in the 'non-fluoridated' community and 891 in the 'fluoridated'.
3. There were other differences between the two communities which were not accounted for, including other elements in the water. There was no control for lead exposure, even though the same cohorts have been used to investigate lead impacts.
4. Many of the children in the 'non-fluoridated' community were likely to have used fluoride (a prescription drug designed to deliver the same amount of fluoride a child would get from drinking fluoridated water).
5. Moreover, NZ at the time was one of the largest tea drinkers in the world. Tea is another major source of fluoride.
6. Thus, there was little difference in the total dose of fluoride between the two cohorts, and the power to determine any difference in IQ between the two cohorts was very limited.
7. Of the four factors Broadbent did adjust for, most were only crudely controlled. For example, SES was determined solely by the father's occupation and classified into just three levels. Inadequate adjustment for SES could obscure a lowering of IQ caused by fluoride, because almost all of the non-water-fluoridated children came from one outlying town that had lower SES than the fluoridated areas.
8. Finally, one should compare the status of the two journals in which these two articles appeared. Broadbent published in a dental journal, not one specialising on neurotoxicity or infant development; Green, on the other hand, published in JAMA Pediatrics, which is one of the leading journals in the world of its kind. Green's paper was subjected to as rigorous a peer review as a paper of its kind is ever likely to get. Listen to the JAMA editors discuss the paper in an online podcast.

So, out of the five citations provided by the UK government paper to dismiss concerns about Bashash (2017) and Green (2019), only one citation provided relevant criticism on only one of the two papers, and that has been addressed by the authors.

UK citizens deserve a lot better from the UK government on this serious issue.

b) Lord Reay's brilliant, succinct speech in the House of Lords on January 31st 2022 opposing fluoridation, as the White Paper on Health and Social Care passes through Parliament...

Lord Reay (Con):

"My Lords, I have added my name in opposition to Clauses 147 and 148 standing part of the Bill – tabled by my noble friend Lady McIntosh and Pickering and supported by the noble Baroness, Lady Jones of Moulsecoomb. These clauses enshrine the Government's intentions to expand the rollout of water fluoridation throughout the UK. In case the House should decide that they remain, I will also speak to Amendments 259B and 259D in my name, which would make the implementation of the policy conditional on an environmental impact assessment and the analysis of recent US Government-funded, peer-reviewed studies.

"My noble friend, Lady McIntosh, apologises for not being present in the Chamber today, as she has been pinged. However, she wanted me to convey her support of Amendments 259B and 259D.

"It is most unfortunate that the important topic of water fluoridation has not been granted a full debate of its own in this House. That it has been slipped in by these back-door clauses does a huge disservice to the issue and detracts from the important debate over the Health and Care Bill itself. These clauses in effect ride roughshod over the current status quo on water fluoridation in terms of legal precedent; they also ignore the existence of effective alternative strategies for fighting tooth decay, as practiced not only in Scotland but in most other countries in the world.

“While roughly 10% of the population lives in artificially fluoridated communities, it is true that no areas have been added since the late 1980s. Successive Governments have tried to increase the coverage but have failed, including in Southampton a few years ago, because the measure meets stubborn resistance from local communities, who do not wish to be mandated to drink fluoridated water. In Scotland, Lord Jauncey in the case of *McCull v Strathclyde Council* 1983 concluded that fluoridation amounted to illegitimate medical treatment via the public water supply. Since then, the health service in Scotland has focused on other measures to improve children’s oral health, with a considerable degree of success.

“The Government policy paper used to support the insertion of these two unfortunate clauses appears to report only what the fluoridation proponents want Ministers to hear: namely, that the practice benefits teeth and poses no threat to the rest of the body. However, four high-quality US Government-funded studies published since 2017, all peer reviewed, looked at the effects on the brain. Each one reached concerning conclusions. The first of these studies, by Bashash et al, appeared in the high-impact journal *Environmental Health Perspectives* in 2017. This mother-child cohort study showed a four-to-five-point loss of IQ in offspring associated with maternal fluoride intake, typically experienced in a fluoridated community. Some 300 mother-baby pairs were followed for 12 years, with a mother’s fluoride exposure measured directly via urinary fluoride level, and the paired offspring’s IQ was measured at four, and at six to 12, years of age.

“Since this study, a further three, similarly robust, US Government-funded studies — Bashash 2018, Green 2019 and Till 2020 — all point in the same direction: damage to the infant brain, IQ loss, and/or increased ADHD symptoms associated with fluoride exposure at the doses experienced in artificially fluoridated communities — which, I might add, were at lower fluoridation levels than those considered for the UK, with 0.7 ppm versus 1 ppm. According to Dr Philippe Grandjean from Harvard University, ‘Fluoride is causing a greater overall loss of IQ points today than lead, arsenic or mercury’.

“Another recent study in 2015 by Professor Stephen Peckham, an adviser to the Select Committee on Health and Social Care, chaired by Jeremy Hunt, showed that incidences of hyperthyroidism are nearly twice as likely to report high prevalence in the West Midlands, which is a fluoridated area, in comparison to non-fluoridated Greater Manchester. Professor Peckham’s study has been omitted from the policy paper’s references. So, too, has the conclusion of the important 2015 Cochrane review, which found as follows: no strong evidence that fluoridation reduced tooth decay in adults; no strong evidence that tooth decay increased when fluoridation was halted in a community; and, contrary to claims from promoters that fluoridation helps low-income children, it found:

“There is insufficient evidence to determine whether water fluoridation results in a change in disparities in caries levels across socioeconomic status.

“All these scientific findings are extremely important, but I find it very worrying that they appear either to have been ignored or dismissed by the authors of this policy paper. Amendment 259D commits the Government to have these four US studies reviewed by expert toxicologists.

“I turn to the matter of why fluoride in the UK is not considered a medicine when the WHO has recently classified it as such. Why do the Government refuse to do the same? They contend that water fluoridation has a medical benefit in terms of reduced tooth decay. Could it be that by defining fluoridation water as medicine, the Government then submit themselves to regulation and scrutiny? The MHRA is responsible for the licensing requirements for medicinal products. If fluoridated water were treated as a medicine, individuals would then have the absolute right to refuse the administration of water fluoridation by choice, and industrial-grade fluoridating chemicals would not be allowed. Of course, if it were defined as a medicine, it could not be administered without consent. When fluoride is delivered via toothpaste, the individual has a choice in the matter. When it is carried through the public water supply, there is no individual choice and the ingested fluoride goes to every tissue in the body, including those of the unborn child. This is particularly unfortunate for lower-income families, who cannot take avoidance measures such as bottled water or filters. Moreover, there is no assessment of individual health, size, dose, physical and mental state. Contrary to the direction of modern medicine, whereby treatments are increasingly tailored to the individual, water fluoridation is a crude, one-size-fits-all strategy.

“The legality of the Government’s determination to avoid defining water fluoridation as medicine is questionable. The Supreme Court of Canada in the *Municipality of Metropolitan Toronto* case in 1957 held that fluoridation was using the water supply for a medicinal purpose, which was separately reaffirmed by Lord Jauncey years later. The Lord Jauncey decision explains why Scotland has no communities with artificial fluoridation. The Scottish health department, to its credit, instead has developed an exciting programme called ‘Childsmile’. This is a programme of early education on both dental hygiene and diet. It involves both schools and parents and has proved successful and cost effective. Not only has dental decay been reduced but the overall health of children in terms of fighting sugar consumption and obesity has been improved. This programme is relevant to the cut and thrust of the Bill but it has been ignored in the policy paper. Given the success of Childsmile in Scotland, can the Minister say whether the Government will

consider a rollout of this programme throughout the UK?

“It is conservatively estimated that only 2% of the water supplied by water companies is consumed by domestic users. This would mean that 98% of the water containing fluoride would re-enter waterways, with the potential for damaging plant and aquatic life and entering the food chain. Under the EU dangerous substances directive, fluorides are classified as deleterious to the aquatic environment. Last month, the Environmental Audit Committee in the other place published a report concluding that a chemical cocktail is polluting English rivers and putting public health and nature at risk. We must refrain from adding fluoride to the toxic mix. I add that, in addition to the toxicity of fluoride itself, contaminants such as lead and arsenic are often present in the industrial-grade fluoridation chemicals used. These frequently derive from the hazardous waste of the phosphate fertiliser industry. Given the repercussions for the environment, our waterways, animals, fish and other wildlife from this policy, it seems surprising that Defra does not appear to have been involved in the decision-making process for water fluoridation. Perhaps the Minister can explain why.

“Last year, we heard the Secretary of State for Health and Social Care announce that £10 million will be charged to water bill-payers for the rollout of water fluoridation. However, I suggest that it will cost taxpayers considerably more. Greater Manchester has around 22 treatment plants, which would need to be refitted for £1 million to £2 million each. Using a back-of-the-envelope calculation, to cover parts of the UK not already fluoridated will conservatively cost in excess of £300 million, excluding chemicals or running expenses. The policy paper fails to reveal how much the proposals will actually cost.

“Perhaps the Minister can share with us the forecasted costings of rolling out water fluoridation throughout the UK in terms of plants, chemicals and other extraneous expenses. In addition, have Her Majesty’s Treasury, the Public Accounts Committee or any respected independent bodies such as the Office for Budget Responsibility or the IFS scrutinised the real costs and their effect on the public finances and health budget? Will these unknown extra costs be met by cuts to NHS dental departments or other parts of the health budget? This money would be far better spent on early intervention on dental hygiene and diet, as in the Scottish Childsmile programme.

“In conclusion, I contend that Clauses 147 and 148 endorsing fluoridation should be withdrawn from the Bill. There is significant evidence that findings of fluoride’s neurotoxicity at low doses have been established and are not going to go away. The evidence becomes more compelling with each month that passes as more research comes to light. Since 2016, the United States National Toxicology Program has been engaged in a systematic review of all the neurotoxicity studies. It would be prudent to wait for the publication of its final report, expected this year, to aid the Department of Health and Social Care’s much-needed reassessment of this issue either via the next PHE monitoring report or otherwise.

“The overriding need to protect the development of the infant brain should be placed above any further effort to promote this well-intentioned but outdated practice of water fluoridation. We must pause this policy while the Government appoints a more diverse array of scientific advisers to digest the US post-2017 studies and until we know beyond reasonable doubt that we are not harming the infant brain or the environment.”

(Contains Parliamentary information licensed under the Open License v3.0)

