

This response was submitted to the consultation held by the Nuffield Council on Bioethics on *Public Health: ethical issues* between May and September 2006. The views expressed are solely those of the respondent(s) and not those of the Council.

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p.11 "Fortification of some foodstuffs ...has been accepted for some time. *Why has the fluoridation of water met with more resistance? What are the reasons behind international differences in the acceptance of fluoridation of water? What criteria are there that determine acceptance?*"

The Nuffield Council on Bioethics' Consultation Paper here exposes an awareness of a far more highly contentious issue in drinking water fluoridation than that of the addition of essential nutrients to key foodstuffs. [In fact the Council would become open to accusations of dereliction of duty of care if they subsequently failed to consider these contentious matters with sufficient objectivity in due course, having perhaps inadvertently provided only a highly selective and essentially untruthful account of these matters thus far].

I begin with two summary statements:

1. *Neither mass fluoridation nor any form of dietary fluoride supplementation are necessary or desirable practices.* Their recommendation by dental public health apologists is clearly based upon false, because highly selective and misleading - or deliberately manufactured - evidence for *apparently* worthwhile and lasting benefit in reducing human dental caries experience, and deliberate failure to accept or to consider all the available evidence of harm, much of it extremely serious.
2. *All fluoride ingestion (or inhalation, or transdermal absorption) exposes the recipient to the very well documented effects of a broad spectrum cytoplasmic poison, which is carried directly to all parts of the body in the blood stream and via tissue fluids.* Fluoride ions can cross cell membranes with ease; there is no dose threshold below which cytoplasmic fluoride exposure ceases to be damaging to some extent. Detoxification processes have evolved in order to minimise the ongoing and cumulative harm that would otherwise occur inevitably under natural conditions of exposure. Higher organisms actively excrete fluoride or segregate it into biological matrices (e.g. bone, hair) from where it can do minimal harm. [In man rapid renal action removes about half; the skeleton collects and stores the rest, but it will also slowly release it into the blood stream. Hair and nails also store and so remove a little].

*Low level background environmental fluoride exposure is inevitable*, particularly in any industrial society in which all potentially harmful fluoride emissions are not effectively contained and so removed from the human environment a.f.a.p. at source.

It is clearly desirable to *minimise* all unnecessary internalisation of assimilable fluorides throughout life. Yet primary industrial processors are still permitted to release without disclosure very large quantities of airborne fluorides. When harmful air pollution effects are discussed the highly toxic fluoride emissions are rarely if ever mentioned, although they are ~ 2 orders of magnitude (OM) more toxic than the same mass of sulphur compounds and far more rapidly *lethal* if concentrations can build up in the ambient air supply, as happened in the Meuse valley (1930) and in Donora (1948) and in London (1952, 1956).

When we consider evidence of harm from drinking water fluoridation *alone* the scope for harm varies greatly with individual circumstances but OTBE the very young (reproductive/developmental harm e.g. doubled rate of Down's Syndrome births to younger mothers in fluoridated areas, and clearcut increases in stillbirths and neonatal deaths) and the increasingly elderly (e.g. chronic harm e.g. hip/wrist fracture rates up by 15-40% in fluoridated areas) are most at risk. The evidence that fluoridated water both accelerates the development of many kinds of

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cancer (cancer promoting effect) and can also play a significant role in enhancing the incidence rates of particular kinds of cancer is also strong. [Chronic harm of many other kinds - affecting entire populations - becomes far more obvious and severe where drinking water levels reach 2-3 ppm, Endemic fluorosis via such levels of exposure is common in China and India, particularly where populations are poor and malnourished. Endemic fluorosis can be permanently reversed by ensuring that drinking water is effectively defluoridated to well below 1 ppm (and if necessary by ensuring that indoor fluoride air pollution e.g. from burning low grade coal is also effectively removed)].

By fluoridating a typical supply water – (more than 95% of which naturally contain from 0.0 to 0.2 ppm fluoride) - to 1 ppm one inevitably promotes an OM increase in direct daily fluoride consumption from drinking water (and substantially more is ingested via prepared foods and drinks, and from locally processed foods). [Dr. Peter Mansfield has published two significant papers concerning excessive intakes of fluoride in fluoridated West Midlands and in Lincolnshire, and associated harm to health in the exposed populations, particularly w.r.t. to enhanced susceptibility to chronic bone disease].

The truth is that, however efficient the evolved internal detoxification systems against internalised fluoride ions may *normally* be, and however well the organism can compensate for any and all reduced efficiency of normal biochemical processing, there are always situations in which those whose constitutions predispose them to greater than normal susceptibility will suffer unpleasant consequences that the majority will avoid (i.e. fluoride sensitive individuals). Also particular kinds of irreversible cytoplasmic damage will occur more frequently whenever fluoride ions happen to be in the vicinity of particular tissues e.g. the chromosomal disruptions occurring in the ovaries that lead to aneuploidy (Down's Syndrome and other trisomies) or the enameloblast derangements that lead to dental fluorosis. In other words, it is inevitable that a due proportion of the exposed populations will suffer particular kinds of damage, and that their numbers will rise in proportion to their overall exposure levels to fluoride ions available for internalisation from the external environment. The task of discovering precisely which kinds of harm rise steadily with overall fluoride exposure, and the incidence rate of each kind, is critical information. But in the peculiar situation of fluoridation, no *official* attempt to monitor the incidence of harm was made, after certain examples of harm had already emerged from the early trials (e.g. an excess of cortical bone defects in exposed children) because it had already been decided that *no evidence of harm was admissible* once the decision to proceed with mass fluoridation had been taken.

It was the established severity of harm via gaseous and particulate fluoride exposure in the workplace and downwind of many basic industrial processing plants that lay behind an organised conspiracy between U.S. industry and military and government agencies to protect fluoride polluters against successful litigation by damaged workers and communities. If drinking water fluoridated to 1 ppm can be successfully labelled as “a safe and dentally beneficial public health measure” - and thus, too, the telltale signs of dental fluorosis can be spread throughout the entire fluoridated population - it becomes far harder to establish successful claims for chronic harm to health via ongoing fluoride exposure, and the public are lulled into a false sense of security w.r.t. fluoride toxicity. [In fact, the human lung makes the body far more susceptible to chronic harm via relatively low level but persistent fluoride air pollution than it is to harm from regular uptake of waterborne fluoride ions passing through the digestive system; the large volume of air circulated daily c.f. the volume of water consumed daily helps to ensure that this is so].

The aggressively propagated *claim* that dental caries is effectively reduced in overall severity via drinking water fluoridation (and thus, it was subsequently argued, equally well by fluoride dietary supplementation – leading on to spurious claims that fluorine is therefore ‘an essential element’) was initially based on deliberately selective evidence for ‘enhanced caries resistance’ obtained from communities with naturally fluoridated water supplies in the U.S. by Trendley Dean, and from crude experiments on enamel reinforcing effects in laboratory rats by Gerald Cox, working in the Mellon Institute. [Hitherto only the acute and chronic poisonous and tooth-damaging aspects of

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fluoride internalisation had been clearly recognised by the scientific community, and U.S. Water engineers in 1938 had already recommended 0.1 ppm fluoride or below as an effectively safe level, and had recommended 1 ppm or more as sufficient grounds for rejection of the supply]. Cox and his mentors were determined to overturn these rational safety margins. [Prof. Ziegelbecker - using a far larger database - later showed conclusively that overall caries experience does *not* depend in any consistent way on the fluoride content of the water supply at levels below ~2 ppm, (i.e. far more factors are involved) but that both the incidence and the intensity of dental fluorosis inevitably does].

In fact many minerals - present in foods and drinking water or absent from them - can influence overall dental caries experience - which is generally significantly higher wherever e.g. calcium [Ca<sup>2+</sup>] supplies in particular are inadequate. In the U.K. areas with soft - i.e. low mineral content (esp. Ca<sup>2+</sup>) - water supplies produce correspondingly higher caries experience e.g. Wales, Scotland and elsewhere.

[There is undoubtedly a public health case to be made for *calcium* supplementation of very soft water supplies - an easy matter since lime or calcium chloride are readily available, as is natural calcium carbonate, and none of these dissolved, ionised species are at all toxic at the levels required to *enhance* dental and skeletal integrity and they are naturally beneficially present in many surface waters. Other public health issues are also related to the hardness of the water supply e.g. SMRs are measurably lower OTBE where Ca<sup>2+</sup> levels are higher. In particular, very soft waters are associated with higher heart attack mortality, now believed to be caused primarily by the cardiotoxic effects of dissolved aluminium species - which cannot so readily accumulate in heart muscle if there is sufficient dissolved silica in the water supply]. [U.K. water companies are under no general obligation to add extraneous minerals to the supply, and none has ever made lifelong human health criteria any part of their remit].

It is ironic that the *only* 'public health' activity that has ever been requested or, since 2003, may be *demand*ed of U.K. water companies involves adding demonstrably toxic industrial waste fluoride solutions (which also demonstrably augment several further supply and serious biotoxicity problems) while the possibility of enhancing public health (including dental and skeletal health) via optimising natural *essential* and *non-toxic mineralisation* of the water supply has been entirely *ignored* in a market-driven economy.

Conclusion If the above represents an essentially valid account of the dangers of mass fluoridation (and of all forms of fluoride internalisation) in the context of a supposed dental benefit (which proves to be transient at best, damaging to the recipients and essentially a costly failure as dental public health policy) whose underlying purpose is to cover up evidence of harm from widespread fluoride air pollution, then clearly there is no proper justification for any government or health authority or dental health advocate to promote such a malpractice by any means whatsoever. [Under fluoridation, *all* growing children suffer some degree of subclinical developmental harm; some extra children will be born with severe handicaps that they would not have suffered otherwise and others will die shortly after birth, while later on yet others will contract often fatal osteosarcomas - all unnecessarily]. In this light, mass fluoridation is clearly a form of state-sponsored aggression against its most vulnerable citizens; in promoting and protecting the practice from proper scrutiny the State is in dereliction of its duty of care for those (in particular the unborn, the very young and the increasingly elderly) who are not in a position to protect themselves from the ensuing harm.

No sufficiently enlightened citizen would give his/her consent to adoption of such a perverse practice; rather they would demand that the primary legislation and other implementations intended to enable its propagation be abolished immediately.

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Fluoridation policy was developed in a climate of fear of successful litigation in compensation for severest harm already suffered by employees and innocent bystanders; it protected powerful vested interests from the full consequences of inadequate control of their, arguably, nationally vital chemical technologies, including nuclear weapons technology and nuclear fuel processing. [See 'The Fluoride Deception' Christopher Bryson (2004)].

In the 21<sup>st</sup> century it is naïve to imagine that such criteria no longer undergird the policy, or that it has ever proved itself to be a valid public health policy in its own right. The 'protected pollutant' is still being protected by an illegitimate and purposefully deceptive practice. What is also true is that modern technology and investment capacity are quite capable of preventing almost all of the harmful escapes of toxic gases and particulates; effective implementation of adequate controls probably requires the setting up of international agreements to comply with tighter control limits (in order to maintain economic parity) - in the meantime, those countries most closely allied with U.S. economic interests after WW II, including Canada, Australia and New Zealand, and the U.K. have clearly found it easier to continue to promote fluoridation policy than to dismantle it, and this despite all efforts of opponents to demonstrate the iniquities of the policy. Nearly every other country, including former members of the Soviet bloc, has either rejected mass fluoridation outright, or discontinued the practice as dentally ineffective and demonstrably harmful.

WHO and Fluoridation WHO clearly recognises the toxicity of fluorides, and stipulates that any country that decides to initiate mass fluoridation must find out how much fluoride is already being consumed by the target population. In practice this advice is invariably ignored by fluoridation promoters.

Further Notes Concerning Overall Ineffectiveness against Dental Caries set against Dental Fluorosis Augmentation and Biototoxicity of Fluoridated Drinking Water.

[Effects that were to some extent clarified, but also deliberately downplayed and misrepresented by the NHS-funded York CRD in 2000]

Dental Effects a) Enamel Effects There are two main ways in which dental enamel can be reinforced by fluoride ions. The first involves the progressive replacement of the initially porous surface bioapatite layer as it emerges into the mouth by its gradual conversion to fluorapatite - itself a natural enamel sealing process - whenever fluoride ions are present in oral fluids. The second is via enhanced recrystallisation of dissolved enamel, after acid attack from cariogenic bacterial action in the presence of sugar solutions inside incipient enamel lesions (growing microcavities) has died down; otherwise these sites would progress much more rapidly to substantial carious lesions that penetrate into the underlying dentine and require filling. [There is also a clearcut biotoxic fluoride effect – the cariogenic oral bacteria cannot metabolise sugar so fast because the necessary enzymes are poisoned; bacteria have no effective fluoride excretion mechanisms]. These effects all require the maintenance of substantial concentrations of fluoride ions close to the enamel surface; these concentrations can best be provided and boosted on a regular basis by direct applications of fluoride toothpastes or by mouth rinses, which are then largely rinsed out of the oral cavity, but tend to remain where they are most needed. At 1 ppm fluoridated water has a relatively *weak* and ultimately *ineffective* retarding effect on the growth of carious lesions; it cannot prevent but can only slow down progressive enamel penetration in occluded sites e.g. between the teeth and on the fissured surface of molars, where most fillings are required. [The dental research literature is full of papers investigating these effects].

b) Delayed Eruption Apart from these local enamel effects, there is also the well-documented delay in emergence of both primary and secondary dentition in man, which is generally believed to be due to the inhibitory effect of fluoride ions on thyroid activity, controlling the development of the hard tissues. This effect also delays skeletal growth and development. Natural or artificial fluoridation can produce a delay of between 6 months and 2 years in the emergence of teeth.

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Given all these factors, it is not really surprising that carious lesions do not develop quite so rapidly where drinking water is fluoridated. But when *overall childhood caries experience* is compared – the only proper measure of the effectiveness or otherwise of fluoridation – there are *no net differences* between fluoridated, part-fluoridated and unfluoridated communities. This has been invariably confirmed with sufficiently large databases e.g. in the U.S. by Yiamouyiannis, in New Zealand by Colquhoun, and elsewhere. But if one stops collecting data at age 14, there appear to be ~15% more caries-free children on average in fluoridated communities - (an essentially unrealistic 'end-point' consistently quoted by the York CRD as "a rather small net benefit").

In order to reinforce the evidence base for 'real and lasting benefits from fluoridation' dentists can be required to carry out more non-dental (i.e. not drilling/filling) procedures, such as descaling, use of fissure sealants etc. as soon as fluoridation is implemented. [The true cost of providing this 'evidence of benefit' - in addition to all costs incurred via fluoridation plant installation and operation - has recently been shown to have amounted to a more than doubling of dental expenditure in Wolverhampton since fluoridation was extended to the entire population in 1996].

Against such *spurious* evidence for caries benefits, one has to place the *certain* emergence of significantly disfiguring dental fluorosis in a significant proportion of the child population; this is now far more widespread than in the 1950s because of all the additional fluoride in products that may now be ingested while dental enamel is being laid down by the easily poisoned enameloblasts. York CRD found it to be of clinical significance in ~12% of all children living in fluoridated areas i.e. requiring expensive remedial treatments (e.g. veneers, which are not funded by the NHS, and which need replacement at 10-year intervals).

Inadmissible Evidence of Harm It is necessary for the maintenance of all pro-fluoridation dental health programmes that *every* kind of evidence of harm is - somehow - 'dealt with' as soon as it emerges and subsequently. For - if water fluoridation were once to be officially *admitted* to be substantially *unsafe*, after several decades of strident denials of harm in all the countries that officially endorse its use - crippling lawsuits would undoubtedly re-emerge to threaten the profits of many fluoride polluting industries. Dental public health apologists would be collectively exposed as liars and cheats, and successive governments as deliberately ignoring all the harmful consequences of their blanket endorsements of a seriously flawed dental public health policy, whatever their original justifications were for introducing it. It must be clearly understood that the introduction of mass fluoridation always was a political decision taken as the Cold War emerged after WW II - and not a rational, evidence-based public health initiative. Public health dentists were given the task of overseeing the collection of 'evidence for dental benefits' and dental researchers - not toxicologists - were given the responsibility for examining and rejecting all the evidence of harm as fast as it emerged, often with the help of 'tied' research projects that were designed to fail to confirm the evidence of harm found by independent studies. Not all claims of harm via fluoridated supplies have been confirmed in practice, but the evidence base is now so large and so comprehensive that it cannot really be discredited by the efforts of review committees appointed to keep all the evidence a.f.a.p. at bay indefinitely.

York CRD were required to complete a comprehensive review of the available evidence for dental benefits and for harm of all kinds attributable to fluoridation.

In their Report (2000) they draw attention to the generally poor quality of the evidence for dental benefits - had benefits been real and unambiguous without any need to 'improve results' there should have been no end of high quality evidence by now. Had York CRD taken proper account of the phenomenon of delayed caries development their measurements of benefit would also have had to be downgraded to 'apparent benefit'. But it is when reviewing the evidence of harm that those responsible for selecting the papers for inclusion and comparing the results for particular adverse outcomes reveal a persistent determination to arrive at the conclusion that 'no significant effect can be confirmed'. Perhaps the most blatant example of this is found in their analysis of bone fracture studies. Several very large scale ecological studies, which also controlled for a number of confounding factors, have shown that there is a statistically significant increase in hip fracture rates in the elderly under fluoridation – an outcome that should have led to serious reassessment of the ethical position and the wisdom of continuing to advocate mass fluoridation, especially as the trauma of such events can prove fatal to 25% of elderly women who

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The only firm conclusions that one can draw from this part of the Review is that critiques of the validity of evidence of harm, inevitably made available largely through population exposures, were unrealistically demanding (so 'no evidence of sufficient quality was found') whilst the quality of evidence in the individual papers selected in any area was not examined sufficiently critically; thus overall presentation of results was clearly intended to obscure the true significance of the available evidence of harm in key areas yet again.

Conclusions There may well be areas of public health where professional opinions and views on effective policy promotion are more insightful and valid than those of the public at large - who may simply need to be educated to understand the health implications of their current behaviours before they can be persuaded to modify them. Not all will be willing to do so, but a substantial majority will behave reasonably and make the right choices when given the means to do so, having first been persuaded that the policy is being pursued for good reasons. The principles of personal autonomy, consent and trust are clearly of importance, here (as is that of the fundamental trustworthiness of the authority whose guidance needs to be followed).

Undergirding all rational public health policy implementation there is a fundamental requirement - that is the need to have first clarified the key issues involved sufficiently thoroughly and honestly, in order to be sufficiently certain that what is recommended is indeed correct. In areas of uncertainty and controversy, there is a deeply regrettable tendency for those in authority to become dogmatic and authoritarian in their approach, both towards members of the public and also to dissenting members of their own profession. [It would of course be far better if the uncertainties could be openly and honestly admitted and if soundest policy, based on a true balance between benefit and risks, be derived. It is normally the fear of losing the necessary level of public support for the policy, if a rare but severe adverse outcome is openly acknowledged as a possibility, which most often promotes professional cover-ups].

This said, there is one ostensible public health issue which demonstrably fails on all the available criteria - mass fluoridation. It has repeatedly been shown to be both dentally ineffective and unsafe; the protective topical action of fluoride ions on dental enamel can be far better provided in other ways, by which all the toxic effects of ongoing fluoride ingestion can be largely avoided. Two of the underlying reasons for mass implementation of fluoride *ingestion* are to induce milder forms of dental fluorosis, which hides the most obvious manifestation of low level fluoride air pollution, and to create the belief that repeated small intakes of fluoride ions are 'perfectly safe' - because this deflects public attention from all the more harmful consequences of fluoride air pollution. It is intended to protect not the public but profit margins, and the ongoing failures of primary processing industries collectively to control their polluting activities sufficiently tightly.

The only criteria that can help to determine acceptance of mass fluoridation are the confident mendaciousness of its proponents, and the ignorance of those who may thus be induced to part with their fundamental right not to be medicated without their personal consent. An informed public is required in order to campaign *against* successive rafts of government legislation intended to facilitate mass fluoridation in the U.K. as against all local initiatives intended to facilitate the introduction of fresh fluoridation schemes. [This legislation clearly breaches both U.K. poisons legislation and fundamental human rights legislation, and now that the U.K. government is bound by several more key areas of EU legislation, it can only be a matter of time before a successful court action in the EU Courts of Justice serves to cripple, if not to entirely dismantle, the propagation of mass fluoridation in the U.K. - and not before time].

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