

Boring but Important: The Fluoride Issue

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I got involved with the human impact of fluoride consumption when a small patient got ill from swallowing toothpaste. This happened twice to the same child at a year's interval, an impressive anecdote. Most surprising, however, was the total lack of any NHS test for fluoride in body fluids. Since it ranks with lead and arsenic in its toxicity, this seemed suspicious.

In due course Templegarth Trust funded a laboratory for urinary fluoride analysis and we have performed it routinely for nearly ten years. When we reached 1,000 tests (around 700 individuals) we set about analysing the results. An appreciable fraction, 13%, were getting 3mg or more fluoride daily, even in non-fluoridated areas. That led me to review the literature and I asked the protagonists to recommend some for me. To my surprise they contained fragments of evidence to make up the following thread of argument.

Fluorides naturally present in water (salts of calcium) are fairly harmless up to 4mg/litre because they appear to be poorly absorbed. Sodium fluorides are completely ionised and are absorbed, however*. These have been used to fluoridate water for up to 51 years so far. The science does not show for certain that this replicates natural fluoride: it may represent an entirely new environmental challenge.

About half the fluoride consumed is stored in bone. We know that 10-20mg daily for ten years or more is enough to produce a crippling degree of skeletal fluorosis. But 1.5-3mg/day for 70 years is equivalent in effect, unless slow accumulation produces a different result. If not, 13% of people in non-fluoridated parts of England are getting enough fluoride from other sources to cripple them by the age of 70, and beginning harming them noticeably in the 50s.

I drew this to the attention of 50 prominent fluoridation advocates, none of whom came up with a valid rebuttal of this reasoning. My next move was to solicit, through the press, volunteer urine samples from residents of the West Midlands, fluoridated for 35 years now. Of 262 samples received to last month, 65% represented consumption of over 3mg/day some up to 18mg.

This should mean that some people in the West Midlands have fluorotic bone disease already, and by chance the medical patron of an osteoporosis support group in Coventry took up our invitation. It was eventually possible to compare 39 samples from her members with 39 other residents of the same area, of matching age and sex but with no known medical diagnosis. There was a striking difference in distribution of fluoride consumption, significant at the 2% level (unpaired t-test, Student's method). We cannot account for this trivially so far: addictive tea-drinking in group meetings was ruled out!

All this has met with flat denials from public health and government officials up to now. Scientists at the MRC Environmental Epidemiology Unit, Southampton, have however taken it seriously and are cooperating with me in further enquiries. Dr R.K.Griffiths, of the West Midlands NHS Executive, is not entirely closed to further investigation.

My next move is to propose to these people a pilot study, funded by charitable money, of West Midlands patients up for hip replacement following fracture. Twenty-four hour urinary fluoride output would give a rate of on-going fluoride accumulation, and hip bone fluoride

concentration would give a present level: both together enable us to extrapolate at what age in the future (or the past) the various thresholds for disease of different severities will be (or have already been) crossed. An independent laboratory capable of the work is available, and I hope a small ad hoc working group can steer the pilot study through to generally agreed standards.

Meanwhile we will test the urine fluoride level of any member prepared to collect a 24-hour specimen and send us a sample of it, marked with name, date of birth, post-code and the estimated volume of the 24-hour collection. Donations around ten pounds to support the laboratory are welcome but not essential. Please enclose a stamped self-addressed envelope and a note of any details you think we may care to know. Seal the sample carefully, wrap it in tissue, seal it in a plastic bag and send it in a jiffy-bag or box. Address: Dr. Peter Mansfield, 84 Tinkle Street, Grimoldby, Louth, Lincs LN11 8TF, UK.

**Max Payne comments:* The point is that in water neither sodium fluoride nor calcium fluoride exist. What exists in aqueous solution is the fluoride ion which is a fluorine atom plus an electron which makes it a negatively charged ion. It makes no difference whatsoever to the chemical properties of the ion whether it was originally in a crystal lattice with positively charged calcium ions (calcium fluoride) or with positive sodium ions (sodium fluoride). The relative ease with which water breaks down the lattice, (solubility) has no effect on the subsequent properties of the fluoride ions in solution. The only issue is the total concentration of fluoride ions in tap water. The anti-fluoridation lobby may, or may not, have anything important to say about this, but would they please not talk chemical nonsense on the way.

Political Note:

The UK government has declared its intention through a Green Paper to pass legislation through the House of Commons by the end of October bringing in compulsory fluoridation of water supplies, should health authorities request it. There is a considerable literature on the potential environmental and health hazards of fluoridation, but it is strongly supported by the dental and medical establishments. The politico-economic dimension is that fluoride salts are a waste product from the aluminium processing, fossil fuel and phosphate fertiliser industries and these wastes are hard to dispose of. The National Pure Water Association (12 Dennington Lane, Craggstone, Wakefield WF4 3ET, UK. Tel: 01924-254433) is co-ordinating a concerted campaign against it on extremely limited funds. Some web references follow: www.derweb.ac.uk/probe/editfluo.html for an editorial. Article on Low-Level Fluoridation and Low-Level Radiation: Two Case Histories of Misconduct in Science: <http://www.cadvision.com/fluoride/schatz.htm> There is a chronology of Fluoridation at the web site: <http://www.trufax.org/fluoride/flchrono.html>

Peter Mansfield is a family doctor with a special interest in food quality and health.