

The fluoride debate

Part one

By **Dr Michael Godfrey**

Notwithstanding the authoritative media statements on fluoridation benefits that ‘the science is settled’ (referring to the benefits and risks of fluoridation), some disturbing and dissonant facts are apparent.

Lack of safety data

Government-appointed bodies have raised concerns at the lack of any safety data for fluoridation of water supplies: starting with the US Agency for Toxic Substances and Disease Register (ATSDR) in 1993 and 2003; the York Report, a British National Health Service investigation in 2000 (McDonagh et al.); the National Research Council (NRC-USA) in 2006; and the Scientific Committee on Health and Environmental Research (SCHER-EU) in 2011.

To quote from the ATSDR: ‘very limited human and animal data were located to evaluate the immunological effects of fluoride’. And, from the NRC report: ‘The existing data base does not permit a complete assessment of the immunotoxic potential for fluoride.’

The above organisations all requested that definitive research had to be done into the potential for adverse health effects. However, public health policy makers in these fluoridated countries: America, Australia, New Zealand and the Republic of Ireland, have persistently ignored these requests, while apparently reassuring successive regulators and Ministers for Health that water fluoridation was effective and safe. This lack of due diligence spanning decades has successfully maintained the status quo and is essentially based on a legal fiction that fluoridated water does not constitute medication.

Disease incidence correlated with water fluoridation

Research data improved in February 2013, with the presentation to the government in Ireland of a report ‘Public Health Investigation of Epidemiological Data on Disease and Mortality in Ireland Related to Water Fluoridation and Fluoride Exposure’. This presentation compared the incidences of 28 diseases in the Republic of Ireland (RoI) with both unfluoridated Northern Ireland (NI) and the EU (D Waugh, available at: www.enviro.ie). Notably, the RoI has had mandatory water fluoridation for 50 years. While it is acknowledged that epidemiological studies cannot prove cause and effect, they do reveal statistical correlation.

1. Comparing RoI with NI, the incidence of type 2 diabetes was 60 per cent higher in RoI. New Zealand is also experiencing an epidemic of diabetes currently according to government statistics (2009) exceeding 270,000 diagnosed cases (compared to 81,000 in 1996). A similar pattern is seen in both the USA with 7% population incidence of diabetes and Australia with concurrent increased obesity.
2. Endocrine and metabolic disorders including hypothyroidism, blood and immunological disorders were all markedly elevated in the RoI compared with NI.
3. Admission rates for chronic obstructive pulmonary disease (COPD) were highest for the RoI at 364 per 100,000 with New Zealand close behind at 319, followed by Australia at 312 compared to fewer than 200 per 100,000 for the EU (OECD 2012).
4. Asthma rates in the RoI were double those in the NI and, according to the ISAAC study (1998), the RoI incidence was the highest in the EU. Notably, on a worldwide comparison, all the fluoridating countries share equally elevated rates (Masoli 2004).

5. One in five of the RoI population has arthritis.
6. Deaths in males from ischaemic heart disease were highest in the USA with New Zealand, next followed by Canada and then the RoI (WHO 2011).
7. New Zealand leads the world for SIDS (sudden infant death syndrome, or cot death) per 100,000, followed by the USA, Argentina, Australia and the RoI.
8. The RoI was the leading country in the world for deaths from congenital abnormalities, followed by New Zealand and the USA (WHO 2011).
9. At six months less than 10% of infants in the RoI are still breastfed versus more than 40% in the EU. RoI infants would therefore have significantly greater fluoride exposure and increased risks of neurotoxicity and lowered IQ – a well-documented adverse effect of fluoridated water (Choi et al, 2012). The US EPA website includes fluoride in the 100 chemicals having ‘substantial’ evidence of developmental neurotoxicity.
10. The RoI has the highest rates in the EU for prostate, ovarian, colorectal and pancreatic cancers and non-Hodgkin’s lymphoma (all of which are notably of concern in New Zealand). A statistically significant increase in uterine cancer was also detected following water fluoridation during the American occupation of Okinawa, Japan, between 1945 and 1972 (Tohyama 1996).

Higher rates of osteosarcoma

In all four of the long-term fluoridating countries, compared with the rest of the world, osteosarcoma rates are also significantly elevated. Significantly, the NRC scientific committee highlighted the carcinogenic potential of fluoride and unanimously concluded that fluoride appeared to have the potential to initiate and promote cancers including: ‘Osteosarcoma presents the greatest *a priori* plausibility as a potential cancer target site, the NTP animal study findings of borderline increased osteosarcomas in male rats, and the known mitogenic effect of fluoride on bone cells in culture’ (NRC 2006, p 275).

Notably, Bassin’s landmark study showing more than 500% increased risk of osteosarcoma in boys if exposed to fluoridated water during the mid-childhood growth spurt occurring between age 6 and 8 years has not been refuted (Bassin 2006). A recent paper has also confirmed elevated serum fluoride levels in patients with osteosarcoma compared to healthy controls (Kharb 2013).

The elevated rate of bone cancers that are mainly osteosarcoma occurs in two peaks: one in young men (where it is frequently fatal); and another peak in the elderly where the comparative increased incidence is even more marked at treble the rates seen in non-fluoridated populations of mainland Europe. Age-specific rates for New Zealand confirmed this pattern with peaks reaching three per 100,000 in teenagers and the 65–85 age cohort (NZ Health Dept. statistics, accessed 2013), with the latter exceeding the latest Australian rates at 1.8 per 100,000, compared to 0.4 per 100,000 for the EU (Mirabello, 2009), and possibly due to our lower selenium levels.

The common denominator: fluoride?

From all of the above one must reasonably come to the conclusion that there is a common denominator linking these four countries with what appears to be markedly increased multi-system disease incidences in the presence of water fluoridation. Fluoride is a known endocrine disrupter (*State of the Science of Endocrine Disrupting Chemicals*, UNEP/WHO report 2012) and ‘an endocrine disruptor in the broad sense of altering normal endocrine function’ (NRC, 2006). Notably, American adults ingest daily an average of 3 mg of fluoride and a 1–3 year old (under 14 kg) over 1.5 mg/day, or double an amount that would alter thyroid function (EPA 2010).

Michael Godfrey (MBBS) founded the Bay of Plenty Environmental Health Clinic in Tauranga.

Full references available on request to the editor.

References

- US Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease Registry (ATSDR). 2003. [Toxicological Profile for Fluorides, Hydrogen Fluoride and Fluorine](#), Dept of Health Services, Washington, DC, USA
- Bassin EB et al, 2006, [Age-specific fluoride exposure in drinking water and osteosarcoma](#) (United States). *Cancer Causes Control*; 17(4)
- Choi AL et al., 2012. [Developmental Fluoride Neurotoxicity: A Systematic Review and Meta-Analysis](#). *Environ Health Perspect*; 120
- EPA (Environmental Protection Agency, USA), 2010, [Fluoride Exposure and Relative Source Contribution Analysis](#). Health and Ecological Criteria Division. Office of Water, Washington, DC.
- EPIC-InterAct. 2013. [Consumption of sweet beverages and type 2 diabetes incidence in European adults](#). *Diabetologia* 56
- The International Study of Asthma and Allergies in Childhood (ISAAC) Steering Committee. 1998. [Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema](#), *The Lancet*, 351
- Kharb S et al. 2012. [Fluoride levels and osteosarcoma](#). *South Asian J Cancer* 1(2)
- Masoli M et al. 2004. [The Global Initiative for Asthma \(GINA\): Executive summary of the GINA Dissemination Committee Report](#). *Allergy* 59(5)
- McDonagh M et al. 2000. [A Systematic Review of Public Water Fluoridation](#) NHS Centre for Reviews and Dissemination, University of York
- Mirabello L et al. 2009. [International osteosarcoma incidence patterns in children and adolescents, middle ages, and elderly persons](#) *Int J Cancer*. 125(1).
- National Research Council. 2006. [Fluoride in Drinking Water. A Scientific Review of EPA's Standards](#), National Academies Press, Washington, DC, USA.
- OECD 2011. [Hospital admission rates populations aged 15 and over](#). OECD Health Indicators.
- Tohyama E. 1996. [Relationship between fluoride concentration in drinking water and mortality rate from uterine cancer in Okinawa Prefecture](#), Japan. *J Epidemiol*. 6.

PHOTOS

Of water in glass or from tap