

Dr. Tony Holohan,

Chief Medical Officer

Cc: Mr. Enda Kenny T.D. Department of Taoiseach

Dr. James Reilly T.D. Minister for Health

Mr. Phil Hogan T.D. Department of Environment

Mr. Simon Coveney T.D. Department of Agriculture Food and Marine

Mr. Cathal Magee, CEO Health Service Executive

Professor Kieran Murphy, President Irish Medical Council

Ms Francis Fitzgerald T.D. Minister for Children

Ms Laura Burke, Director General, Environmental Protection Agency

Dr. Philip Michael, Chairperson, Irish Doctors Environmental Association

Ms. Emily O Reilly, Ombudsman for Children

Re: Fluoridation of Public Drinking Water Supplies and Report on Human Toxicity, Environmental impact and Legal Implications on Water Fluoridation

12th April 2012

Dear Dr. Holohan

I wish to thank you for your letter of March 27th regarding my report on the *Human Toxicity, Environmental impact and Legal Implications of Water Fluoridation*. There are a number of critically important issues that need to be addressed in regard to information provided in your letter. I apologize for the length of this reply but given the seriousness of the subject and the misconceptions regarding water fluoridation that have unfortunately entered the mainstream in Ireland, it is necessary to address some of these points in detail within this correspondence. I would, however, ask that you please find the time to examine my report where the medical and scientific findings are discussed in detail and scientific references are provided.

It is perhaps most appropriate to begin by examining the incorrect belief that the assessment of water fluoridation demonstrates that it is safe and effective for all age groups and does not cause any ill effects. For your information **Dr. Howard Koh, Assistant Secretary for Health, U.S. Department of Health and Human Services (HHS)** confirmed in 2011 that in fluoridated communities in the U.S. all infant formulas are contaminated with fluoride from fluoridated water and that fluoride in infant formula presents a toxic threat to babies who are exclusively bottle-fed with formula milk constituted from fluoridated water.

The exact same risk applies in Ireland, however, the risk factor is much greater in this country due to the extraordinarily high prevalence of non-breastfed babies in Ireland.

At the most basic level of medical diagnosis an assessment of fluoride intake is paramount in understanding the mechanisms of fluoride metabolism, specifically the prevention of dental caries, dental fluorosis, and skeletal fluorosis. The 1971-2003 **World Health Organization International Standards for Drinking-water** explicitly state that "in the assessment of the safety of a water supply with respect to the fluoride concentration, the total daily fluoride intake by the individual must be considered. Apart from variations in climatic conditions, it is well known that in certain areas, fluoride-containing foods form an important part of the diet. The facts should be borne in mind in deciding the concentration of fluoride to be permitted in drinking water."

As with any medical or nutritional examination the daily fluoride intake of an individual can only be accurately carried out based on an individual's age, weight, fluid intake, dietary preferences, level of exercise and nutritional needs and through the availability of up to date fluoride concentrations in beverages and foodstuffs. Fluoride levels in foodstuffs will vary from country to country and according to the source of supply of food products. In order to establish accurate dietary fluoride exposure levels, there is a requirement for national databases to be established to monitor products sold and consumed within individual countries.

No such database for fluoride exists in Ireland. To suggest in the absence of this information that the artificial fluoridation of water is safe and effective is beyond comprehension.

DIETARY EXPOSURE TO FLUORIDES

It is now absolutely clear from a vast amount of published scientific information, supported by my own research data, that the ingestion of excessive amounts of fluoride has become a serious public health problem, particularly in fluoridated communities. This is largely a consequence of dietary intake from fluoridated water as well as processed food, cooked food and beverages which are made up from fluoridated water in addition to other anthropogenic sources of fluoride in foodstuffs from residues of fluoridated pesticides, herbicides, fumigants and fluoride-based fertilizers and other major sources of fluoride from dental hygiene products such as toothpaste or mouthwashes to fluoride-based pharmaceutical medication.

Astonishingly in Ireland, despite the concerns expressed globally by public health and food authorities, **the Department of Health or the Food Safety Authority** have yet to develop a national database of fluoride in beverages and foods or to commence, at a most basic level, an assessment of the dietary fluoride exposure of the general population.

In the absence of this data, how can it even be suggested that fluoridation of drinking water is either safe or effective?

With regard to dietary exposure to fluoride and public health risks, it is generally accepted that the amount needed to cause crippling fluorosis in a 45- to 100-kg person is 10 to 20 mg per day for 10 to 20 years. Since it is accepted that fluorides accumulate in a linear fashion, the crippling dosage

of 10 mg per day for 10 years is the same as 5 mg per day for 20 years, and so on.

The Institute of Medicine has determined that an adequate intake (AI) of fluids for men is roughly 3 litres (about 13 cups) of total beverages a day. The AI for women is 2.2 litres (about 9 cups) of total beverages a day. If we extrapolate this to a person consuming fluoridated water as the only form of fluids this would equate to 2.4mg ingested per day from water at current optimal levels. This does not take into account other dietary exposure from toothpaste, processed foods or beverages such as tea or wine which are known to contain high levels of fluoride. The average individual in Ireland consumes four cups of tea a day. **Some tea sold in Ireland constituted with fluoridated water may contain > 15 mg/l fluoride.¹** If an adolescent or adults were to consume 4 cups of tea a day combined with 1.5 litres of drinking water (equal to the recommended daily fluid intake) the total liquid dietary intake would be in the region of far in excess of the recommended 3mg per day suggested for dental protection in adults.

In reality, however, for many individuals in Ireland the major portion of fluid intake is from consumption of tea not drinking water. It is not uncommon for many individuals to consume up to eight cups of tea a day. Add to this the dietary intake from foodstuffs processed in fluoridated water (which will contain additional fluorides than foodstuffs processed in non-fluoridated water), the residues of fluoride based pesticides, herbicides and fumigants that are present in foodstuffs and the total exposure level further increases. For many individuals therefore **their dietary fluid intake of fluoride could be far in excess of 50mg per day.**

This would equate for an average-sized woman to a risk level of 1.36mg/Fluoride/per kg/day which is 27 times the recommended daily standard as calculated by the U.S. Agency for Toxic Substance and Disease Registry.

One must add that this figure does not include other dietary sources of fluoride which depending on diet may be considerable.

To illustrate the risk, in February 2012, the U.S.A. EPA proposed to ban Sulfuryl Fluoride because of **fluoride contamination of foods and beverages** from this chemical and its direct health implications for consumers.

It is important to note that, for persons with kidney disease such as diabetics, the health risks are much greater because the majority of fluoride will not be eliminated from the body due to malfunctioning kidneys. In every respect these levels of dietary exposure to fluoride represent a clear public health risk for the development of crippling musculoskeletal fluorosis, with chronic joint pain and arthritic symptoms – with or without osteoporosis.

The amount of fluoride individuals are exposed to in Ireland today may explain the prevalence of diagnosed chronic musculoskeletal pain within the population of Ireland.

¹ A common herbal tea such as Sage tea has been found to have fluoride levels of >25mg/l while some African teas are known to have > 15mg/l Fluoride.

Clearly, one must agree that it is evident that there is therefore no safe limit for fluoride in drinking water and that every effort must be made by regulatory authorities to immediately reduce the level of exposure to this toxic both in drinking water and foodstuffs. **The Government of Ireland should act on this as a national health emergency.**

FOOD SAFETY STANDARDS

As Chief Medical Officer, I would naturally expect that you would also accept the findings of the European Food Safety Authority² who found that “excessive intake of fluoride during enamel maturation before tooth eruption from birth to eight years of age, when enamel formation is complete, can lead to reduced mineral content of enamel and to dental fluorosis of deciduous but predominantly of permanent teeth.”

You may not be aware that **for bottle fed infants the EU Scientific Committee recommended a maximum fluoride level below the current standard applied for water fluoridation in Ireland**. In Ireland this standard is clearly exceeded for bottle fed-babies and as such contributes to increased prevalence of dental fluorosis as well as the risk of fracture and skeletal fluorosis in later life. This is clearly contrary to any observation or statement that the “policy of fluoridation of public water supplies (which) continues to make an effective contribution to oral health in Ireland”.

As you will know from reading the SCHER assessment, their scientific committee documented that infants solely fed with a baby formula diluted with water containing 0.8 mg F/L ingest, at a minimum, **0.137 mg F/kg/day** compared with **0.001 mg F/kg/day** for an infant, who is solely breastfed. As you may already know an infant who is bottle-fed formula milk made from fluoridated water consumes at a minimum 137 times the total fluoride intake of that of a breastfed baby. The **U.S. National Research Council (NRC) of the National Academies** has found that when body weight is taken into account, non-nursing infants receiving formula made with water fluoridated who are less than one year old are exposed to a fluoride intake which is about **three times** that of adults.

As Chief Medical Officer, I am certain that you will concur that this level of exposure is extraordinarily high and poses immediate and far-reaching consequences for the nation’s health. Unexplainably, however, public health authorities in Ireland have failed to warn healthcare practitioners and parents of any risk associated with water fluoridation and contamination of infant formula feed. As outlined in Chapter 8 of my report the level of fluoride in formula milk reconstituted with fluoridated water could be deemed critical regarding the potential for developing dental and skeletal fluorosis that may result from high concentrations of dietary fluoride for infants in later life.

While it is most welcome that you have acknowledged in your letter that you accept the findings of the SCHER review, you may be unaware that another

2 European Food Safety Authority, Opinion of the Scientific Panel on Dietetic Products, Nutrition and Allergies on a request from the Commission related to the Tolerable Upper Intake Level of Fluoride, The EFSA Journal (2005) 192, 1-65

EU Scientific Committee found that a daily intake as low as **0.020 mg F-/kg body weight** may result in mild forms of fluorosis in the permanent dentition.^{3,4,5,6} As with the SCHER review the SCCNFP review provided recommendations and observations regarding exposure to fluoride. As Chief Medical Officer I would expect that you would acknowledge and accept their findings in regard to fluoride with particular reference to exposure risks of children this toxin. I would also like to highlight that as far back as 2006 the **U.S. Centres for Disease Control and Prevention (CDC)** and the **American Dental Association (ADA)** advised that using fluoridated water to mix formula could cause infants to develop fluorosis. The ADA report stated that "infants could receive a greater than optimal amount of fluoride through liquid concentrate or powdered baby formula that has been mixed with water containing fluoride during a time that their developing teeth may be susceptible to enamel fluorosis." The ADA warned that, **in order to prevent tooth damage, fluoridated water should not be mixed into formula or foods intended for babies aged one and younger. You may be aware that no such warning has ever been issued in Ireland.**

As Chief Medical Officer, you may already be aware that the chronic maximum recommended limit (MRL) for fluoride as established by the **U.S. Department of Health and Human Services Public Health Service Agency for Toxic Substances and Disease Registry (ASTDR)** is 0.06mg/kg/day, which is based on chronic human data examining the most sensitive known endpoint of fluoride toxicity. In regard to renal effects, an MRL value of 0.06 mg/kg/day was adopted as the Target Organ Toxicity Dose (TTD_{RENAL}) for fluoride. In regard to reproductive effects, an MRL value of 0.06 mg/kg/day was adopted as the TTD_{REPRO} for fluoride. In regard to neurological effects, an MRL value of 0.06 mg/kg/day was adopted as the TTD_{NEURO} for fluoride. It is clearly evident that in Ireland **all infants bottle-fed formula feed constituted with using fluoridated water exceed the chronic MRL noted above by multiples of the recommended levels.** It is clearly therefore a matter of scientific fact, that the current levels of exposure of infants to fluoride in Ireland presents an immediate health risk, not just for dental fluorosis, but for much wider health risks over the lifetime of individuals.

In regard to infants, I can only presume that you are unaware that the **European Food Safety Authority (EFSA)** recommended optimal fluoride intake level for infants above 6months of age is **0.05mg/kg body weight/day**. This is even more stringent than the level recommended by the ATSDR. One can

³ Opinion of the European Commission Scientific Committee on Cosmetic Products and non-food products (SCCNFP) intended for consumers) concerning the Safety of Fluorine Compounds in Oral Hygiene Products for Children under the age of 6 years. SCCNFP/0653/03, Final, June 2003.

⁴ Fejerskov O, Baelum V, Richards A 1996 (B) Dose-Response and dental fluorosis Chapter 9 . IN: Fluoride in Dentistry (second edition) Eds., O. Fejerskov, J. Ekstrand & B. Burt, Munksgaard, Copenhagen, 153 – 166.

⁵ Levy SM, Hillis SL, Warren JJ; Broffitt BA, Mahbubul Islam AKM, Wefel JS, Kanellis MJ, 2002. Primary tooth fluorosis and fluoride intake during the first year of life. Community Dent Oral Epidemiol 30:286-95.

⁶ McDonagh MS, Whiting PF, Wilson PM, Sutton AJ, Chestnutt I, Cooper J, Misso K, Bradley M, Treasure E, Kleijnen J, 2000. Systemic review of water fluoridation. Brit Med J Oct 7, 321 (7265):844-5.

conclude that the scientific facts and evidence are abundantly clear, that fluoridation of water supplies is not 'safe' for every age group or sector of society and that all previous assumptions regarding water fluoridation, as presented by the Forum for Fluoridation or the Irish Expert Body on Fluorides and Health, are ill-founded and not based on current scientific knowledge. It is for that purpose I forwarded my report to your offices for your personal review. In light of the recommendations by international scientific bodies, it is somewhat incredible that it is now acknowledged that the long-term medical consequences (separate from dental fluorosis, which is now endemic in Irish society) of fluoride exposure in children have never been studied in Ireland. Similarly, despite the obvious and clear dangers to public health and the dramatic rise in documented dental fluorosis amongst the public, it is astonishing that to date no bio-monitoring study has been undertaken.

MONEY BETTER SPENT

It is obvious that the overall finances needed to cover the operational budget and management of water fluoridation could be better directed to support preventative healthcare or emergency services and to achieving greater success in behavioural change within society on dental hygiene that would be far more effective, safer, sustainable and beneficial in the long-term. The annual budget for secretarial services for the Forum for Fluoridation (€400,000) combined with the cost of silicofluoride chemicals (€4,700,000), supervision, training and auditing costs (estimated at €10,000,000), combined with equipment maintenance, overheads, insurance and pollution prevention costs (€30 million for 235 water treatment plants with water fluoridation infrastructure) could be most obviously redirected to providing more public health dentists for those in most need of dental treatment especially in socially-deprived areas and, in particular, to supporting breastfeeding initiatives for mothers and babies within these communities, which would go a long way to reducing the prevalence of dental fluorosis amongst children. For example in 2008, it was estimated by the UK Department of Health (DOH) that the cost of implementation of fluoridation of water for the **greater Manchester area** alone would be up to **£100million**. Ultimately the DOH in England did not pursue this policy as it was not deemed to be cost effective.

The financial costs associated with fluoridation of water do not take into account the cost for treatment of dental fluorosis amongst the wider population as a direct consequence of dietary overexposure to fluoride. It is a fact that up to 40% of children under 18 years of ages suffer from dental fluorosis in Ireland with 1% in the category of severe dental fluorosis and 1% in the moderate category. That means that up to 40,000 children or youths are known to have severe dental fluorosis requiring extensive dental surgery. It is particularly interesting to note therefore the statement of Professor Hardy Limeback, the Head of the Department of Preventative Dentistry, University of Toronto and President of the Canadian Association for Dental Research, when he stated that "*in Canada we are now spending more money treating dental fluorosis (the damage caused by fluoride) than we do treating cavities.*" What is now becoming apparent is that this "cosmetic" defect actually predisposes to tooth decay. There are numerous peer-reviewed published international studies to support this. Consequently there is no question therefore but that the prevalence of overexposure to fluoride in

Ireland is of major public health significance and must be addressed immediately.

It is uncertain if any study has been undertaken in Ireland to examine the cost benefit of water fluoridation and to determine the costs to consumers for attempting to repair the damage caused by dental fluorides resulting from such a policy.

Both the European Commission SCHER Review and the NHS York Review did however examine fluoridation of water from a cost benefit analysis perspective and could not determine that it was cost effective.

REVIEW OF RISKS

For over 50 years, Department of Health officials have confidently and enthusiastically claimed that fluoridation is "safe and effective" despite the lack of scientific data to support such claims. Even worse, the relentless promotion of fluoride as a "dental benefit" is responsible for the huge neglect in proper assessment of its toxicity, an issue that has become a major concern for many nations. As there is no substance as biochemically active in the human organism as fluoride, excessive total intake of fluoride compounds might well be contributing to many diseases currently afflicting mankind, particularly those most prevalent in Ireland today as highlighted in my report.

In Ireland, citizens are kept entirely ignorant of any adverse effect that might occur from exposure to fluorides. Ireland wishes to present itself as a science-based economy yet for some reason refuses to accept scientific facts associated with this unnecessary practice. Dental fluorosis, the first visible sign that fluoride poisoning has occurred, is still declared a mere "cosmetic effect" by the Irish Expert Body on Fluorides. This interpretation is no longer supported by other international scientific committees, either in the U.S.A. or Europe.

Scientific findings by the NHS, the U.S. National Research Council, the Irish Expert Body on Fluorides and European Commission have all found that there still remains a lack of credible scientific data to clearly demonstrate that fluoridation is safe, while conclusively finding that systemic fluoridation results in overexposure to fluoride amongst the population and that the topical application of fluoride onto the tooth via toothpaste (not systemic-via drinking water) is the most effective manner to reduce dental caries. These are undisputed scientific facts. As I have outlined in my report, within Europe water fluoridation is a peculiarly Irish phenomenon. It started at a time when Asbestos lined our pipes, Lead was added to gasoline and paint, Polychlorinated biphenyls (PCBs) filled our transformers, Dichlorodiphenyltrichloroethane (DDT) was deemed "safe and effective", Chlorofluorocarbons (CFCs) were believed to be the wonder chemicals of the 20th century and many fluoride-based pesticides or fumigants such as Sulfuryl Fluoride were all considered safe and effective but are now effectively banned. In February 2012 the U.S.A. EPA proposed to ban Sulfuryl Fluoride because of fluoride contamination of foods and beverages from this chemical and its direct health implications for consumers.

The public health risks associated with fluoridation of water have been highlighted by no less than fourteen Nobel Prize winners in chemistry and medicine who have publicly denounced fluoridation of water. Most recently **Dr. Arvid Carlsson, Pharmacologist and Nobel Laureate in Medicine was also instrumental in the Swedish Government deciding not to fluoridate their water supplies.**

The International Society of Doctors for the Environment and the Irish Doctors Environmental Association are both strongly opposed to water fluoridation. You may be unaware that thousands of scientists, dentists, doctors, academics and other professionals worldwide have signed a petition to end what they regard as an unnecessary and dangerous practice.

No other European nation, including their health or environmental authorities, supports the mandatory fluoridation of drinking water supplies. Yet fluoridation of drinking water supplies not only remains enforced in Ireland but the health authority and local government continue to misrepresent both the dangers and degree of international support associated with such a controversial policy.

At a most basic level it is unconscionable how the Department of Health could continue to support such a policy when there is a complete lack of accurate data or scientific evidence to support its continued use, as has been demonstrated in the findings of the NHS York Review, the National Research Council of the United States of America Review and the various and numerous scientific committees of European member states, in addition to the most recent findings of the European Commission and its agencies.

In addition to the latter I would like to highlight the **British Medical Journal, Review of Fluoridation** (2007) which found that "if fluoride is a medicine, evidence on its effects should be subject to the standards of proof expected of drugs, including evidence from randomized trials". They also found that "there have been no randomized trials of water fluoridation."

The subsequent European Commission SCHER Review (2010) similarly found that incomplete toxicological information was available on the health impacts of silicofluorides chemicals used for water fluoridation.

No toxicological study or randomized trials have been undertaken to date by the health authority in Ireland.

The 1971 WHO Drinking Water Standards noted that "in the assessment of the safety of a water supply with respect to the fluoride concentration, the total daily fluoride intake by the individual must be considered." It is truly disturbing therefore that the HSE have now acknowledged that they have never undertaken such a study in the 45 years since commencement of this policy. Such a basic oversight is completely unacceptable by any modern standards of healthcare.

As I discussed in my report, a legal court in Europe has already found that water fluoridation is defined as medication. I would hope and believe that no competent physician would prescribe for a person he has never met, whose medical history he does not know, a substance which is intended to create bodily change, with the advice that they take as much as they like with no prescription, medical checkup or ongoing medical surveillance regardless of that individual's health status or possible sensitivity to fluoride compounds and regardless of other medications they may be taking or their total daily fluoride intake exposure from other sources, and that they continue to self administer for the rest of their lives, because some children suffer from tooth decay. Every right-minded individual would accept that this is a preposterous notion. Yet this is exactly what the support for this policy entails. I would earnestly hope that the standards and guidelines of medical training, education and ethics in Ireland would ensure that this will stop to protect the personal welfare of individuals and their right to limit their bodily exposure to this toxin which cannot be achieved by mandatory artificial fluoridation of public drinking water supplies without offering alternative non-fluoridated public water to each household in Ireland.

Consumers and parents have a legal right to informed choice and bodily integrity; such a right is currently denied in Ireland.

One would hope and believe that given the enormous potential implications for public health of using untested chemicals for the systemic medication of a population that the Health Authorities would err on the side of caution and follow a **precautionary approach** rather than wait to have the risks confirmed which is the approach the HSE is currently following.

Clearly, given the scientific uncertainties presented by international scientific committees regarding the health risks from fluoridation of water, the acknowledged inadequate risk assessments and that every other European country has ended the practice of fluoridation of drinking water supplies; in addition, that the Russia Academy of Sciences, the British Medical Research Council, the NHS York Review, the U.S.A. Academy of Sciences and European Commission as well as other esteemed scientific bodies, have also detailed their concerns regarding fluoridation, the Irish Government must surely therefore take a precautionary stance and end this unnecessary policy in line with our European neighbours.

One must believe that the precautionary approach is the most appropriate course of action to follow, until comprehensive scientific toxicological and ecological risk assessments are completed, as recommended by the U.S. National Research Council (NRC) and other scientific bodies (details provided in my report) and accurate health surveillance epidemiological studies examining the total dietary fluoride intake of the population are undertaken as recommended by the WHO. Without this information one cannot determine with any accuracy an individual's exposure to fluorides. No toxicological assessment would be complete without examining the co-toxicity of fluorides with other known contaminants such as aluminium and lead.

Undisputed documentary evidence exists regarding health concerns associated with artificial fluoridation of drinking water. I would draw to your attention the findings of the U.S. National Research Council (NRC) Scientific Committee and their comprehensive report on fluoridation published in 2006, which highlighted an alarming number of potentially adverse public health risks associated with water fluoridation. A summary of just some of their findings are presented below. I would ask that you review their report in full.

SUMMARY OF NATIONAL RESEARCH COUNCIL FINDINGS

Furthermore, the NRC documented the growing weight of toxicological and epidemiological evidence identifying clear public health risk associated with the addition of fluoride to public drinking water supplies. Some of the findings and observations of the Research Council included:

1. The NRC reported that the nature of uncertainties in the existing data could also be viewed as supporting a 'greater precaution' regarding the potential risk to humans of water fluoridation.
2. The NRC found that "*it is apparent that fluorides have the ability to interfere with the functions of the brain and the body by direct and indirect means*".
3. The NRC of the United States of America reported an association of uterine cancer (combination of cervical and corpus uteri) with fluoridation.
4. The NRC reported a similar association with oral-pharyngeal cancers among females.
5. The NRC warned that from an immunologic standpoint, individuals who are immuno-compromised (e.g. AIDS, transplant and bone marrow- replacement patients) could be at greater risk of the immunologic effects of fluoride.
6. The NRC reported how cancer registries indicated a consistent trend of kidney cancer incidence with duration of fluoridation.
7. The NRC reported that fluoridated water is known to elicit acute gastrointestinal systems affecting the liver, kidney & immune system.
8. The NRC reported how scientific studies⁷ have demonstrated that at least 1% of the population complains of GI symptoms after fluoridation is initiated.
9. The NRC reported that fluoride exposure appears to bring about increases in blood glucose or impaired glucose tolerance in some individuals and to increase the severity of some types of diabetes.
10. The NRC highlighted the increased health risk to diabetic individuals who will often have higher than normal water intake, and consequently, will have higher than normal fluoride intake for a given concentration of fluoride in drinking water.
11. The U.S. National Toxicology Program (NTP) found that there is a "biological plausibility" of a link between fluoride exposure and osteosarcoma. They reported that this biological plausibility centers around three facts: 1) bone is the principal site of fluoride accumulation, particularly during the growth spurts of childhood; 2) fluoride is a mutagen when present at sufficient concentrations, and 3) fluoride can artificially stimulate the proliferation of bone cells (osteoblasts).

⁷ Feltman, R., and G. Kosel. 1961. Prenatal and postnatal ingestion of fluorides—Fourteen years of investigation. Final report. J. Dent. Med. 16(Oct.):190-198.

REVIEW OF INTERNATIONAL GUIDELINES AND SCIENTIFIC OBSERVATIONS

The U.S. National Cancer Institute Toxicology Program determined, based on limited available studies, that fluoride is an equivocal carcinogen.⁸ This risk association was based on the chemical sodium fluoride. No toxicological studies have ever been undertaken on silicofluoride chemicals that are used in artificially fluoridating drinking water.

While this has been repeatedly raised as a concern no action has been taken to rectify the lack of data by Authorities in Ireland

In addition and without exception the following distinguished scientific bodies have all clearly identified **that infants and in particular babies** under 12 months of age are the most at risk from the potential health impacts of fluoride in drinking water. The learned scientific bodies include:

1. The European Food Safety Authority,
2. The US National Cancer Institute of Toxicology,
3. The European Commission's Scientific Committee on Cosmetic Products and non-Food Products intended for Consumers,
4. The U.S. Public Health Service,
5. The Canadian Association of Dental Research,
6. The American Dental Association,
7. The Scientific Committee of the National Research Council of the National Academy of the United States of America,
8. The U.S. Department of Health and Human Services Public Health Service Agency for Toxic Substances and Disease,
9. The U.S. Centre for Disease Control and Prevention,
10. The European Commission's Scientific Committee on Health and Environmental Risks,
11. The United Kingdom Expert body on Vitamins and Minerals and
12. The British Medical Research Council

While clearly identifying the most sensitive risk group to fluorides, these scientific bodies also established in accordance with internationally accepted scientific standards, tolerable upper limits of human exposure to the toxin fluoride in food.

It is now clearly documented and an accepted fact that **all bottle-fed infants in Ireland** under the age of **12 months** who are fed formula milk made up with fluoridated water at the current optimal levels **exceed the maximum upper safety limits for toxic exposure to fluoride, by multiples of these recommended standards**. These are all undisputed scientific facts. For your information, a similar finding was observed for fluoridated communities in the U.S.A by **Dr. Howard Koh, Assistant Secretary for Health, U.S. Department of Health and Human Services** (HHS) who recently confirmed that in fluoridated communities in the U.S. all infant formulas are contaminated with fluoride from fluoridated water and present a toxic threat to babies and infants.⁹

⁸ NTP (National Toxicology Program) (1990). Technical Report on the toxicology and carcinogenesis studies of sodium fluoride in F344/N rats and B6C3F1 mice (Drinking water studies), Technical Report Series No 393

⁹ Government Perspectives on Healthcare, HHS: Proposed Guidelines on Fluoride in Drinking Water. A Commentary By Howard K. Koh, MD, MPH

It is obviously not the case, as presented by certain officials representing the HSE, that water fluoridation continues to be safe and effective in protecting oral health of all ages. There is absolutely no credible scientific evidence to support this and any suggestion otherwise would be a clear misrepresentation of scientific facts. It is unfortunate that the primary aim of water fluoridation was to improve social inequalities in dental health. I say unfortunate because with fluoridation of water supplies what is actually happening is a widening of social inequalities. According to the WHO, children from socially-deprived areas are most likely to be bottle-fed, consequently, they are also most at risk of developing dental fluorosis.

The prevalence of dental fluorosis disease amongst the population in fluoridated communities has become so endemic that in the United States of America, where the policy originated, that it is now the stated policy since 2006 of the **American Dental Association, the American Academy of Pediatric Dentistry, and the American Academy of Pediatrics** that **fluoride** should **not be given to infants** under 6 months, in any circumstance, and that the limit for children from 6 months up to 3 years of age should be <0.25 mg/day. As far back as 1999, the U.S. **Institute of Medicine** (IOM, 1997) specified Adequate Intakes (AI) of 0.01 mg/day for infants through 6 months and 0.05 mg/kg/day beyond 6 months of age to prevent dental caries.

It is perhaps appropriate to mention also **Professor Hardy Limeback, BSC.,PhD in Biochemistry, D.D.S. Head of the Department of Preventative Dentistry, University of Toronto and President of the Canadian Association for Dental Research**, regarded as the leading Canadian Dental Health Expert and until recently, the country's primary promoter of fluoride. **Professor Limeback** has now withdrawn his long standing support for fluoridation based on current scientific findings and stated¹⁰ on record both within the University and publicly the following, "children under three should never use fluoridated toothpaste or drink fluoridated water and baby formula must never be made up using fluoridated water." Professor Limeback went on to say "residents of cities that fluoridate have doubled the fluoride in their hip bones compared to the balance of the population. Worse, we discovered that fluoride is actually altering the basic architecture of human bones, skeletal fluorosis is a debilitating condition that occurs when fluoride accumulates in bones, making them extremely weak and brittle. In Canada we are now spending more money treating dental fluorosis (the damage caused by fluoride) than we do treating cavities. Here in Toronto we've been fluoridating for 36 years. Yet, Vancouver, which has never fluoridated, has a cavity rate lower than Toronto's. Cavity rates are low all across the industrialized worlds, including Europe, which is 98% fluoride free. **Your well-intentioned dentist is simply following 50 years of misinformation from public health organizations and the dental association.**" This is a truly astonishing statement by a leading international dental health professional, however Professor Limeback must be admired for having the strength of character to admit he was wrong, something that I am sure you will agree scientists and academics are very slow to do.

¹⁰ Interview with Tribune Newspaper in Mesa, Arizona, USA dated on Sunday December 5, 1999.

I believe that it is appropriate as Chief Medical Officer, that you are correctly informed of any misrepresentation of scientific research that you may be unaware of, in particular, the findings of the United Kingdom's **NHS York Review of Water Fluoridation** or the **SCHER Review** both of which appear to have been interpreted incorrectly by the Irish Expert Body on Fluorides. This misrepresentation has now unfortunately entered the mainstream.

It is particularly worrying, as expressed by the **Chairperson of the NHS Scientific Review Committee** himself, that opinions continue to be made which clearly mislead the public about the findings of scientific reviews on fluoridation.

If I may explain further, in regard to the NHS York Systematic Review on the Effects of Water Fluoridation, I would ask that you read the personal statement by Professor Trevor Sheldon, Chair of the scientific committee who undertook the research which is provided in Appendix 2 of my report.

I am sure you will agree that the opening comments are deeply disturbing, as they demonstrated a deliberate misrepresentation and distortion of scientific findings by pro-fluoridation groups, a fact found by the Chairman of the scientific review body who undertook the UK study.

Professor Sheldon clearly states that "(t)he review found water fluoridation to be significantly associated with high levels of dental fluorosis which was not characterised as just a cosmetic issue" and that "the review did not show water fluoridation to be safe." This is a very significant fact and coming from the Chairman of the NHS Scientific Review Committee it clearly cannot be overlooked, as it was, in the Forum for Fluoridation Report in 2002 or subsequently the Irish Expert Body on Fluorides.

Similarly the stated observation of fact as expressed by **Professor Limeback** cannot be disregarded either. I am sure therefore that you would agree that it is inappropriate to remark "*that the balance of scientific evidence worldwide confirms that water fluoridation...does not cause any ill effects and continues to be safe and effective...*" when a substantial body of peer-reviewed scientific evidence clearly demonstrates that this is not the established scientific fact.

This information is provided in greater detail in my report. It is unfortunate that the Department of Health continue to repeat this statement adlib perhaps in the hope that if it is stated enough times it will become fact. It is not fact and it is entirely incorrect.

HUMAN HEALTH IMPLICATIONS OF WATER FLUORIDATION

In regard to examining the human health implications of water fluoridation there is no doubt that the most comprehensive human health effects study undertaken to date is the **United States National Research Councils (NRC) Scientific Committee on Fluoride in Drinking Water Review 2006**. This study is discussed and summarized in detail within my own report. As you may be aware the NRC Scientific Committee members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine in the United States of America. The NRC report is the least biased, most authoritative and widest-ranging review of the toxic effects of fluoride anywhere. I think it is by far the best summation of the evidence available notwithstanding recent scientific discoveries, which have been included in my report. It is apparent from your letter that you have not had the opportunity to examine this report. In the interests of protecting public health in your position as Chief Medical Officer, I would ask that you please review this critically important report which highlights the urgent need for appropriate human risk assessments to be undertaken in order to examine the toxicological impact of silicofluorides on human health, none of which have been undertaken to date by the HSE.

While I appreciate the demands on your time, as a starting point, I would ask that you read Chapters 5 to 8 of my own report which include some of the findings of the NRC review along with more recent scientific research that is also of great importance. While you may not have time to review the NRC report in full, may I suggest that you read Chapter 14 of my report, which summarises the main findings of the NRC study.

It is beyond any reasonable doubt that the findings of both the NRC and NHS Scientific Reviews are in complete disagreement with the opinions of the Irish Forum for Fluoridation Review of 2002 or those of the Irish Expert Body on Fluorides and Health as expressed in your letter of the 27th March.

It is clearly not accepted by the scientific committees established by the United States, Russia, Canada, the United Kingdom, the European Commission or those of any other nation state within Europe that water fluoridation does not cause any ill effects and is safe. As Chief Medical Officer I am truly shocked that you would make such a statement in your letter.

As you are fully aware, no medication or drug is allowed to enter the market and be used by the public unless it has been tested for human toxicity. The same basic principle should apply to injecting silicofluoride chemical compounds into drinking water that is consumed by the population as a whole.

How can you in your role as Chief Medical Officer state that this chemical is safe when every international scientific committee established to examine the potential impacts of fluoride, clearly determines that no human health risk assessment has ever been undertaken on this chemical?

You are probably not aware of or familiar with the fact, as detailed in my report, that in an attempt to quantify the potential public health risk from fluoridation of drinking water, in excess of **fifty comprehensive epidemiological, toxicological, clinical medicine, and environmental exposure assessments were identified requiring further testing** by the U.S. National Research Council (NRC) and the European Commission's Scientific Committee on Health and Environmental Risks (SCHER). The undertaking of these studies is regarded as of paramount importance for the protection of public health in communities where water fluoridation is practised, the details of which have been examined in my report. The completion of these studies is also a requirement of EU Law.

In addition, you may not be aware that further research was also recommended by these organisations and other national bodies in assessing the health and environmental risks that may be associated with the use of the most common drinking water fluoridation agents like silicofluorides, taking into account their hazard profiles, their mode of use in water fluoridation, their physical chemical behaviour when diluted in water and the possible adverse effects they may have in exacerbating fluoride health effects as reported in some scientific studies.

In response to parliamentary questions on my behalf, the Minister for Primary Health Care, Deputy Shortall T.D., has confirmed the findings of my report that **the Department of Health has no information** on the mutagenic, teratogenic, developmental neurotoxicity, cytotoxicity, carcinogenic effects, cogenotoxicity, short-term and sub-chronic exposures or synergistic/antagonistic effects of fluoride or Hexafluorosilicic acid or silicofluoride compounds on human beings. This is despite the numerous recommendations from scientific bodies that efforts be made to determine the toxicity of fluoride and silicofluoride products.

As Chief Medical Officer, I wish to inform you that the Minister confirmed on behalf of the Department of Health that **no human or animal health risk assessments have ever been completed** on its behalf on silicofluorides and that the biological or toxicological impacts have never been fully examined by the Department. In addition, the Minister confirmed on behalf of the Department of Health, that no studies have been undertaken examining the interactive co-toxicity public health risks associated with silicofluoride compounds when mixed with other water treatment chemicals such as aluminium compounds.

Where it is established that there is a lack of adequate scientific data to demonstrate that a chemical is safe, it is deeply worrying that a position is presented which claims that '*the balance of scientific evidence confirms water fluoridation to be safe*', especially when the body charged with protecting public health and ensuring compliance with EU Law in Ireland has never undertaken any human health risk assessments on the products used for water fluoridation. Simply put, because there is a lack of credible scientific evidence, this does not mean water fluoridation is safe.

I can only accept that the views you have expressed are informed by officials within the Department and are not your personally-informed interpretation. The views expressed in your letter are not supported by scientific or expert groups advising any other European country and do not support the latest EU scientific assessments, which are detailed in my report, including the European Commission's Scientific Committee on Cosmetic Products and Non-Food Products (SCCNFP) intended for consumers, who undertook a study of the safety of fluorine compounds for children under 6 years of age and the European Commission's Scientific Committee on Health and Environmental Risks (SCHER), who were **unable to demonstrate the benefit of fluoridation of drinking water for dental health, while at the same time finding that systemic fluoridation leads to overexposure of the population to fluoride which is clearly now evident in Ireland.**

To understand the significance of this health risk I would draw to your attention the latest studies by **O Mullane et al.**¹¹ (2003) **Browne et al.**¹² (2005) and **Verkerk et al.**¹³ (2010) who found that the prevalence of dental fluorosis, representing chronic overexposure of the population to fluoride, has now reached endemic proportions in Ireland and that water fluoridation is the principle cause of the increased incidence. Remarkably the study by O Mullane et al. identified that the prevalence of dental fluorosis in communities with no fluoridated water was as low as 1.5% compared to 37% in fluoridated communities. Remarkably in comparison to evidence of severe and moderate dental fluorosis in fluoridated communities it was also found that no children were observed with either condition in non-fluoridated areas. The damage that dental fluorosis causes to the teeth is permanent and irreversible and is not just cosmetic as expressed by the Irish Expert Body on Fluoridation. Unfortunately the long-term damage to internal organs of the body or to the physical or mental well-being of an individual is not as visible as dental fluorosis therefore making its impacts more difficult to diagnose.

The report attempts to address the long-term exposure of the population to the health effects of silicofluoride compounds used in drinking water, as well as their co-toxicity with other compounds such as aluminium and lead. It is important that you are aware, that the health hazards, as noted by scientific findings, associated with the enhanced incorporation of lead and aluminium, are increased by the addition of silicofluorides to our drinking water supplies. *None of these hazards have been previously examined by the Irish Expert Body on Fluorides.*

It is also important as Chief Medical Officer that you are aware of the findings of the WHO¹⁴ regarding the link between low calcium and magnesium in

¹¹ O'Mullane DM, Harding M, Whleton HP, Cronin MS, Warren JJ. Dental Fluorosis in Primary Teeth of 5-year-olds in Ireland. Paper presentation at American Association for Dental Research conference, San Antonio, USA in March 2003.

¹² Browne D, Whelton H, O' Mullane D, Oral Health Services Research Centre, University Dental School, Cork. Fluoride metabolism and fluorosis, Journal of Dentistry, Volume 33 Issue 3, March 2005, Pages 177-186

¹³ Verkerk, Robert H.J. The paradox of overlapping micronutrient risks and benefits obligates risk/benefit analysis, Journal of Toxicology, Feb 2010.

¹⁴ Calcium and Magnesium in Drinking-water Public health Significance, World Health Organization, 2009.

drinking water and human health and disease. Of particular concern to any environmental scientist, water manager or public health official are the serious health implications of adding a silicofluoride chemicals to 'soft' drinking water that results in further removing or inhibiting the metabolism of these essential compounds in the human body (a concern noted¹⁵ by the UK British Medical Research Council as far back as 2002). Any such action may be seen to be regarded clearly as a contributing factor to increasing the risk of heart disease, diabetes, neurodegenerative diseases and certain cancers, as previously documented by the WHO.

Where I live in County Cork drinking water is extremely soft with a calcium level of < 20mg/l and a magnesium level of < 5mg/l. Similar levels are to be found in many parts of Ireland as has been detailed in my report. As Chief Medical Officer, you may be aware that the WHO have found¹⁶ that low calcium and magnesium drinking waters are associated with neurodegenerative disease, certain cancers, hypocalcaemia, as well as cardiovascular mortality from cardiovascular, ischaemic heart and hypertensive heart disease and increased risk of sudden death syndrome. As Chief Medical Officer, I expect that you would accept that adding a silicofluoride chemical to low calcium and magnesium drinking waters that will ultimately result in directly removing or inhibiting the metabolism of these essential compounds in the human body, **is not to be recommended.**

This is a medical concern expressed¹⁷ by the **UK Medical Research Council** as far back as 2002.

It is obvious that injecting such compounds into soft drinking water is not a safe practice and may be potentially dangerous. To do so in the absence of any human health risk assessments to prove beyond reasonable doubt that it is safe is entirely inappropriate, most likely illegal and not an action that any responsible health authority should accept in the interest of safeguarding public health and consumers. Clearly, the support of such an unsound policy would result in fluoridation of water being a contributory risk factor to developing heart disease, diabetes, neurodegenerative diseases and certain cancers amongst the population, given the previously documented findings of the WHO and the UK Medical Research Council.

As Chief Medical Officer, you are probably aware that the UK Medical Research Council found that "fluoride seeks out essential elements such as calcium and magnesium and binds with them, thereby interfering with their capacity to fulfill important metabolic processes in the body." It is inconceivable therefore how the Department of Health can continue to insist on adding a chemical compound to drinking water that is now known to further reduce the bioavailability of both calcium and magnesium as well as contribute to other health risks and health consequences. That this would occur at all is alarming and that it would occur in high risk areas with 'soft'

¹⁵ UK Medical Research Council Working Group Report: Water Fluoridation and Health, September 2002

¹⁶ Calcium and Magnesium in Drinking-water Public health Significance, World Health Organization, 2009.

¹⁷ UK Medical Research Council Working Group Report: Water Fluoridation and Health, September 2002

water is deeply disturbing. It is interesting, therefore, that these same geographic areas with known soft waters, as outlined in my report, have been found to be the very medical hotspots for cancer, neurological disease and cardiovascular disease in Ireland.

Within my report there is much more detailed information and examination of the impacts of silicofluorides on human health and the environment. I would ask that you please take the time to read this report in order to assist you in developing appropriate public health policy in the interests of public health and safety. The report includes published studies from over two hundred and twenty separate peer-reviewed international scientific journals covering every aspect of medicine and environmental assessment from dental health to biochemistry, toxicology, metabolism, the blood, bone research, the brain, metabolism, epidemiology, pharmacology, neurotoxicology, molecular neurobiology and environmental toxicology. In total over twelve hundred scientific published papers and references are provided in the report allowing the health, legal and environmental impacts to be examined in some detail alongside associated risks that have not yet been previously examined elsewhere. All of the evidence is clearly convergent and demonstrates that silicofluoride compounds should not be added to public water supplies; when examined collectively the evidence clearly demonstrates that fluoridation of drinking water supplies is both unsafe and is having significant negative health implications for human health, society and the natural environment.

You may not be aware but **legal precedence exists in Europe establishing clearly that fluoridated water is defined as a medicinal product**. Further details of this are provided in Chapter 10 of my report. Within the European Community the primary legislation governing fluoridation of water supplies is the European Council Directive on Medicinal Products for Human Use (2004/27/EC). The State is required under EU Law - to undertake detailed risk assessment and performance of tests and clinical trials including toxicological and pharmacological tests to demonstrate the effectiveness and risks associated with water fluoridation for the protection of public health.

Despite this legal requirement, as noted previously in this letter and in my report, the Government of Ireland or its agencies have not undertaken risk assessments on the fluoridation products in use in Ireland. This constitutes a flagrant and serious violation of Directive 2001/83/EC.

In respect of **EU Food Law**, the EU Commission and expert scientific bodies have found that fluoridated drinking water is not safe for consumption by infants, as it results in **contamination of baby infant formula milk** with fluoride levels far in excess of recommended safety standards.

This is a deeply disturbing fact, one that is well-documented within the SCHER report as well as other scientific publications including the UK Expert Group on Vitamins and Minerals¹⁸ that are noted and referenced within my report.

¹⁸ EVM/01/03/P United Kingdom's Expert Group On Vitamins And Minerals, Review of Fluoride, May 2001

REVIEW OF EU COMMISSION SCIENTIFIC REVIEW ON WATER FLUORIDATION.

I acknowledge that you have stated that you accept the findings of the SCHER scientific committee on water fluoridation. As you may be aware SCHER itself acknowledged that limited evidence from epidemiological studies points towards adverse health effects following systemic fluoride consumption, e.g., carcinogenicity, developmental neurotoxicity and reproductive toxicity and requested more detailed studies to be undertaken in the interests of public safety.

As you are aware Ireland is the only EU member state that has a legislative policy requiring fluoridation of its water supplies, unlike the remaining 98% of Europe, therefore the onus of responsibility lies with the Department of Health to undertake any research necessary to prove without doubt that the chemicals used are safe for human consumption and the environment. This has already been addressed elsewhere.

As you may be aware **SCHER found that the toxicology of Hexafluorosilicic acid and hexafluorosilicates compounds is incompletely investigated.** These are the chemicals agent in drinking water fluoridation that the Department of Health insist on injecting into public water supplies, despite not having been tested for human or environmental toxicity. Naturally you will understand that this is illegal and violates EU and National Law.

You will no doubt also be aware that SCHER observed that water fluoridation was intended to have a beneficial effect on caries prevention but could also induce fluorosis with a very narrow margin of exposure and that there is a risk of dental fluorosis in children in EU countries with systemic fluoride exposure. Within the EU this risk only applies to Ireland. As previously noted dental fluorosis affects over 30% of children in communities with fluoridated water.

In this regard you will also note that, in addition to finding that the systemic exposure to fluoride in drinking water is associated with an increased risk of dental and bone fluorosis, it noted that exposure to fluoride levels during tooth development can result in dental fluorosis. It was also observed that excess systemically absorbed fluoride may impair normal development of enamel in the pre-eruptive tooth. Again all of this is clearly evident in Ireland.

SCHER found that enamel fluorosis seen in areas with fluoridated water has been attributed to inappropriate high fluoride intake. This observation is once again confirmed by studies in Ireland where dental fluorosis has been found to now affect over 30% of children.

Importantly SCHER found that the tolerable Upper intake Level (UL) is exceeded for infants whose diet consists of formulated food products made up with fluoridated water. Unfortunately Ireland has by far and away the highest prevalence of bottle-fed infants in Europe and as the only country with systemic water fluoridation this risk only applies to Irish citizens.

You may also be aware that SCHER found that there is slight evidence that high-level occupational exposure to fluoride affects male reproductive hormone levels and that a few studies on human populations have suggested that fluoride might be associated with alterations in reproductive hormones and fertility. You may also note that SCHER observed that most of

the animal studies on the reproductive effects of fluoride exposure deal with the male reproductive system of mice and rats and **that little or no data is available for human studies.** SCHER acknowledged that animal studies consistently show an effect on spermatogenesis or male fertility.

Of concern also are the findings of one of the most recent neurotoxicity studies undertaken by Rocha-Amador et al. (2007) and noted in the SCHER review, which reported that the findings of this study established “*an inverse association between fluoride in drinking water and IQ after adjusting for relevant confounding variables*”.

You may also be aware that SCHER accepted that some epidemiological studies seem to indicate a possible link between fluoride in drinking water and osteosarcoma (childhood bone cancer) disparities and that fluoride can weaken bone and increase the risk of bone fractures.

You may also be aware that SCHER acknowledged that their **environmental** review was **simplistic** and based on just **one published paper**. It is noted in particular that the observations and conclusion of the reference study¹⁹ on which the review itself observed that “***the toxic action of fluoride resides in the fact that fluoride ions act as enzymatic poisons, inhibiting enzyme activity and, ultimately, interrupting metabolic processes such as glycolysis and synthesis of proteins.***” Or that scientific study has clearly found that fluoride is an endocrine disruptor in the aquatic environment or that the critical level for salmon in freshwater was found to be as low as 0.2 mgF/L while levels as low as 0.1 mgF/L were shown to be lethal to the Daphnia magna, the main food source of both freshwater fish. These levels are far below that discharged from urban wastewater treatment plants and may explain the decline in Irish freshwater fisheries in recent decades since commencement of water fluoridation. These are scientific facts completely opposite to the scenario expressed continuously by the HSE in any correspondence regarding water fluoridation.

You will also be aware that SCHER concluded that topical application of fluoride (not water fluoridation) was the most effective method for preventing tooth decay.

Since you have stated in your letter that you accept the findings of the SCHER review then there is no doubt that you also accept the observations of the SCHER scientific committee as outlined above. It is obvious therefore that your statement suggesting that ‘*fluoridation of water supplies continues to make an effective contribution to oral health in Ireland*’ is misinformed and not based on the latest scientific evidence.

Clearly, If you accept the findings of the SCHER review you cannot accept the continuation of fluoridation of drinking water supplies in Ireland. Despite the fact that the physical, chemical and toxicological properties of all of these compounds have not been thoroughly investigated silicofluorides continue to be used in drinking water in clear violation of the precautionary principle which is enshrined in European law.

¹⁹ Camargo JA (2003) Fluoride toxicity to aquatic organisms: a review. Chemosphere 50: 251-64

LACK OF SCIENTIFIC DATA TO PROVE THAT WATER FLUORIDATION IS SAFE

Any exposure assessment for fluorides should examine the toxicological impact of 'fluoride' and 'silicofluorides' compounds as well as its co-toxicity with other compounds in drinking such as Aluminium Fluoride (AlF₃) and Lead Fluoride (PbF₂). For further information I would ask that you read the statement by **Professor Robert Isaacson**, member of the **National Research Council NRC Scientific Committee** for the evaluation of possible hazards of fluoride in drinking water, which is provided in pages 298-303 of my report.

As Chief Medical Officer you may also be aware that certain additional health risks have clearly been identified by both the EU Commission (SCHER) and U.S. National Research Council (NRC) scientific committees requiring further study as noted in my report (pages 263-281). In particular you should be aware that infants who are fed formula milk constituted with fluoridated water, individuals with diabetes have also been identified by both these distinguished bodies as the most at risk of negative health impacts from exposure to fluoridated water.

You may be aware also that both the SCHER and NRC Scientific Reviews **identified additional epidemiology, toxicology, clinical medicine, and environmental exposure assessments that need to be undertaken in order to fill data gaps in the hazard profile, the health effects and the exposure assessment of silicofluoride compounds.**

For your information Chapter 16 of my report lists a minimum of **fifty-nine recommended studies** required to be undertaken on fluoridation compounds **to quantify the public health risks from fluoridation of drinking water supplies** as recommended by international scientific bodies.

None of these studies have been undertaken by the regulatory authorities in Ireland.

SCIENTIFIC CONSENSUS SHOWS THAT WATER FLUORIDATION IS NOT SAFE

Apart from the two European bodies already mentioned (SCHER and EFSA), you may also be aware that another European Commission Scientific Committee was established to examine Cosmetic Products and Non-Food Products (**SCCNFP**) intended for consumers.

The SCCNFP observed that **systemic exposure to fluoride, resulting from fluoridation of drinking water supplies not only contaminates infant formula food but may impair normal development of enamel in the pre-eruptive tooth and cause fluorosis.**

I would also direct your offices to the report by **the Russian Academy of Sciences** which has also extensively documented the toxicological effects of fluorides.²⁰

²⁰ Molecular mechanisms of cytotoxicity and cell death induced by inorganic fluoride, Sechenov Institute of Evolutionary Physiology and Biochemistry, Russian Academy of Sciences

In regard to ill health effects associated with fluorides, you may not be aware but the **United States Public Health Service** have stated that "(s)egments of the population are unusually susceptible to the toxic effects of fluoride. They include "postmenopausal women and elderly men, pregnant woman and their foetuses, people with deficiencies of calcium, magnesium and/or Vitamin C, and people with cardiovascular and kidney problems."²¹

With respect to health protection for infants, and in particular dental health, you may be unaware that the President of the **Canadian Association of Dental Research**, Professor Hardy Limeback, B.Sc., Ph.D., D.D.S., and Head of the Department of Preventive Dentistry for the University of Toronto has stated that "children under three should never use fluoridated toothpaste or drink fluoridated water. And baby formula must never be made up using fluoridated water." Similarly you may be unaware that the **Journal of American Dental Association** has stated that "the current reported decline in caries tooth decay in the US and other Western industrialized countries has been observed in both fluoridated and non-fluoridated communities, with percentage reductions in each community apparently about the same".

You may also be unaware that **Dr. Simon Beisler, Chief of Urology**, Roosevelt Hospital, and Past President of the American Urological Association, stated that "it is now clear that fluoride is a potentially harmful substance when present in the drinking water in any amount" or that that **Dr. Arvid Carlsson, Pharmacologist and Nobel Laureate in Medicine (2000)** stated that the practice of fluoridation "is against all principles of modern pharmacology. It's really obsolete. No doubt about that...those nations that are using it should feel ashamed of themselves. It's against science. If you drink it (fluorine), you are running the risk of all kinds of toxic actions. And, of course, there are such actions. This is something you shouldn't expose citizens to. I would advise against fluoridation".

Likewise you may be unaware of the recently published paper by **Dr. Valdez-Jimenez, et al.**²² which found that "the prolonged ingestion of fluoride may cause significant damage to health and particularly to the nervous system." The study examined how "fluoride induces changes in the brain's physical structure and biochemistry which affects the neurological and mental development of individuals including cognitive processes, such as learning and memory. It further observed that the effects...are not immediate and that it can take 20 years or more for its toxic effect to become evident." I would also wish to bring to your attention a recent paper published in the **Lancet** which found that "fluoridated water may be having its most devastating effects on the most vulnerable, those in utero and infants less than one year old, whose brains are most sensitive to developmental neurotoxins such as fluoride."²³

²¹ United States Public Health Service Report (ATSDR TP-91/17, pg. 112, Sec.2.7, April 1993)

²² Valdez-Jiménez L, Soria Fregozo C, Miranda Beltrán ML, Gutiérrez Coronado O, Pérez Vega MI. Neurologia 2011 Jun;26(5):297-300. Epub 2011 Jan 20. Effects of the fluoride on the central nervous system,

²³ Grandjean P, Landrigan PJ. Developmental neurotoxicity of industrial chemicals. Lancet 2006;368:2167-78.

Of enormous public health importance, as noted in my report, are the scientific studies, which have found that fluoride inhibits homocysteine metabolism.²⁴ As you are no doubt aware, homocysteine metabolism is associated with neurological diseases including neural tube defect, schizophrenia, bipolar disorder, depression, Parkinson's disease and epilepsy as well as cognitive aging and dementia, all of which are on the increase in Ireland. This is addressed in more detail in pages 74-80 of my report with appropriate scientific references.

As Chief Medical Officer, you are fully aware that Ireland sadly has one of the highest incidences of neurological and cardiovascular disease in Europe, if not the world. It may be coincidental that we are also the most fluoridated community in Europe if not the world, being one of two countries with mandatory fluoridation of public water supplies with over 75% of the population consuming fluoridated water at levels twice the recommended limits in Singapore. It is obvious given the internationally published research highlighting the link between prevalence of neurological disease and overexposure to fluorides that this association cannot be discounted as a contributory factor to this disease prevalence in Ireland.

As Chief Medical Officer I would also like to draw to your attention scientific studies²⁵ that have found that "the human pineal gland contains the highest concentration of fluoride in the body. Fluoride is associated with depressed pineal melatonin synthesis". In regard to the pineal gland you may be aware that the U.S. National Research Council scientific committee, examining fluoride in drinking water, previously stated "recent information on the role of the pineal organ in humans suggests that any agent that affects pineal function could affect human health in a variety of ways, including effects on sexual maturation, calcium metabolism, parathyroid function, postmenopausal osteoporosis, cancer, and psychiatric disease".²⁶

As I have previously outlined in my report and in accordance with legislation^{27,28,29,30} the Health Service Executive is required to establish testing protocols to ensure that adequate epidemiology, toxicology, clinical medicine and environmental exposure assessments are undertaken to protect the consumer as well as determine the environmental impact from exposure to silicofluorides.

²⁴ Mehdi S, Jarvi ET, Koehl JR, McCarthy JR, Bey P. The mechanism of inhibition of S-adenosyl-L-homocysteine hydrolase by fluorine-containing adenosine analogs. J Enzyme Inhib. 1990;4(1):1-13.

²⁵ Luke J. (2001). Fluoride deposition in the aged human pineal gland. School of Biological Sciences, University of Surrey, Guildford, UK, Department of Obstetrics and Gynaecology, The Royal London Hospital, Caries Research 35:125-128.

²⁶ National Research Council. (2006). Fluoride in Drinking Water: A Scientific Review of EPA's Standards. National Academies Press, Washington D.C. p221-22

²⁷ Directive 2006/121/EC

²⁸ Regulation (EC) No 1907/2006 of The European Parliament and of The Council of 18 December 2006

²⁹ Regulation (EC) No 1272/2008 Of The European Parliament And Of The Council Of 16 December 2008

³⁰ The Chemicals Act 2008

I would highlight for your attention that the Chilean Health Minister ordered the cessation of the expansion of the proposed fluoridation of water programme in Chile until an environmental impact assessment was completed to determine the impact of fluoride emissions on freshwater habitats and ecosystems. **As I have noted in my report, no environmental impact study was ever undertaken on water fluoridation in Ireland, this is in complete violation of EU Law. Since fluoridation of water commenced in Ireland some 75,000 tonnes of fluoride has been discharged into local estuaries and salmonid rivers throughout Ireland.**

In the development of human risk assessment testing programmes, such programmes must be undertaken in conjunction with other Departments and State Agencies including the Department of Environment, Department of Agriculture and Food and Fisheries, the Food Safety Authority and the EPA.

As Chief Medical Officer, you should be aware that no such testing protocols currently exist. Furthermore I wish to advise you that water fluoridation results in contaminated foodstuffs in violation of EU Law, in particular, the European Council Regulation (852/2004/EEC) on the Hygiene of Foodstuffs and the European Council Regulations (S.I. No. 243/1998) for Infant Formulae and Follow-On Formulae. The contamination of infant formula food with fluoride from fluoridated water has been examined extensively by the European Food Safety Authority and the UK Expert body on Vitamins and Minerals. The risk for infants who consume fluoridated formula feed was acknowledged by the Assistant Secretary for Health, U.S. Department of Health and Human Services (HHS) in 2011.

COMPLIANCE WITH MINIMUM SAFETY STANDARDS OF GOVERNANCE

If as you advise, the HSE is to continue with the policy of mandatory fluoridation of drinking water supplies, a thorough examination of the scientific recommendations requiring further study should be undertaken immediately demanding comprehensive and costly research, as outlined in my report. In the interim, it is clear that in the absence of any such data or completion of the required toxicological assessments a moratorium on water fluoridation must be put in place to protect consumers. It is simply unacceptable that the State would continue to allow untested chemicals to be added to public drinking water supplies. Failure to protect consumers and enforce EU Law may result in legal action in an Irish or European Court for negligent conduct or actions or systemic negligence in addition to administrative, civil and criminal liabilities against officials who are responsible for implementation of such policy where they are found in breach of EU Law.

Contrary to what you suggest in your letter, the majority of scientific organisations advising national governments worldwide have determined that the policy of water fluoridation is not safe. As it currently stands, the following western European countries and their scientific advisors have rejected fluoridation of drinking water completely as a public health policy: Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway,

Sweden, Spain, Portugal, Switzerland and the United Kingdom. Contrary to your statement the UK does not fluoridate all its water supplies. No water supplies are fluoridated in Northern Ireland, Scotland, or Wales, less than 10% of the water supplies in the England are fluoridated despite the fact that their own internal review by the NHS found that the practise was unsafe. Most recently, in 2008, the Test Valley Borough Council in the UK ended its policy of fluoridation of water supplies while the last city in mainland Europe to terminate fluoridation of water was the city of Basel, Switzerland, in 2003.

In addition, the majority of non-EU countries similarly support this position including India, China, Egypt, South Africa, Japan and many other nation states. It is a fact that there is only one other country in the world that supports Ireland's position on mandatory legislative fluoridation of public water supplies and that country is Singapore. It is worthy to note that the statutory level in Singapore and in Hong Kong is considerably less than that applied in Ireland. In Hong Kong, the level of fluoride in drinking water is set at 0.49mg/l considerably less than the 0.8mg/l standard applied in Ireland.

Contrary to what you have suggested in your letter, Canada as a country does not fluoridate all its public water supplies neither does the United States of America nor New Zealand. In each of these countries it is undertaken by local health authorities and by local government and almost equal percentages of the population do not consume fluoridated water.

Clearly, you are not aware that on health concerns alone over 300 cities and communities in the USA, Canada and New Zealand have successfully ended the policy of water fluoridation since 1990.

You may also be unaware of a recent European study undertaken within 16 countries in Europe examining citizen's opinions on water fluoridation.³¹ This study clearly found that the vast majority of people are opposed to water fluoridation. It is a sad reflection of our democracy that the public in Ireland were **never consulted** on this policy, either prior to its implementation or subsequently and that to this day **no environmental impact assessment** has been undertaken examining how fluoride emissions into the environment may have impacted on our protected habitats and fisheries and sensitive ecosystems . It is even more disturbing that the public have deliberately not been informed of the potential health risks associated with fluoride exposure, in particular, for bottle-fed infants or high-risk sectors of the population such as diabetics. As a parent, consumer and scientist I find this totally unacceptable.

In complete contrast, for example in North America³² the American Academy of Pediatrics recommends no fluoride supplements before the age of 6 months and not more than one cup of fluoridated water (0.25mg) from 6

³¹ Griffin M, Shickle D, Moran N. European citizens' opinions on water fluoridation. Academic Unit of Public Health, Institute of Health Sciences and Public Health Research, University of Leeds, Leeds, UK. Community Dent Oral Epidemiol. 2008 Apr;36(2):95-102.

³² Pediatrics May 1998 Vol. 95, Number 5 RE9511

months to 3 years of age. In Canada³³ parents are similarly advised not to prepare infant formula feed with fluoridated water in order to reduce the amount of systemically ingested fluoride. Likewise in Denmark, the Public Health Authority³⁴ recommends that “a major effort should be used to avoid the use of fluoridated water for dilution of formula powders. In addition when economically feasible young infants fed formulas prepared from concentrated liquids should have these formulas made up with non fluorinated water.”

Yet astonishingly, in Ireland we have the lowest prevalence of breastfeeding in the world resulting in the highest number of bottle-fed babies, all of which are innocently consuming fluoridated water at levels far exceeding the recommended maximum tolerable safety levels, no warnings by the Health Authority or Food Safety Authority have been provided at all to the public. This is completely unacceptable.

As Chief Medical Officer, I believe on behalf of the public interest it is incumbent upon you to raise these concerns with the Minister for Health.

I also request, in the interests of public health and safety and in accordance with the precautionary principle that is enshrined in European law, as well as in accordance with appropriate EU Directives, that you seek an immediate cessation to the water fluoridation policy, until human health risk assessments have been completed by the Irish Authorities to demonstrate that the chemical compounds used for fluoridation of water are safe for human consumption for all sectors of our community particularly the most sensitive groups which include infants and diabetics.

Furthermore I ask that in accordance with EU Law and as directed by the Minister for health in Chile that you demand of the regulatory authorities that they must clearly demonstrate that the anthropogenic fluoride emissions from wastewater treatment plants resulting from artificial water fluoridation do not impact on the environment, food safety or fisheries and comply with all relevant EU legislation.

Evidence to demonstrate this must be provided by the regulatory authorities in accordance with EU Law.

I would add, that I have not, as you implied, raised any concern in my report regarding fluoridated toothpaste. I have however as previously noted in this letter and within my report, advised that the scientific consensus worldwide is that where fluoridated toothpaste is widely available, as in Ireland and elsewhere in Europe, that there is no requirement for fluoridation of water supplies. This is the current position as I have already noted of every other European country as that of the WHO. I would respectfully ask therefore that you read my report especially given the cost in time, resources and personal commitment to complete this endeavour, all of which was undertaken at no

³³ Brothwell D, Limeback H. (2003). Breastfeeding is protective against dental fluorosis in a nonfluoridated rural area of Ontario, Canada. *Journal of Human Lactation* 19: 386-90.

³⁴ Ekstrand, J 1996, Fluoride intake, Fluoride in Dentistry second edition Denmark pages 40-52.

cost to the exchequer. It is logical that by Ireland following the example of the rest of Europe and terminating the policy of water fluoridation is would help the exchequer and allow much need funds to be directed to essential front line services elsewhere.

Finally may I reflect on the advice of your office last year regarding the health risks posed by radiofrequency electromagnetic fields from mobile phones for children as they are obviously relevant to the matter of health protection for children in general. In June 2011, in your position as Chief Medical Officer you advised that, given there is general consensus that **children** are **more vulnerable** to radiation from mobile phones than adults that "therefore the sensible thing to do is to adopt **a precautionary approach** rather than wait to have the risks confirmed." You further advised, "given the scientific uncertainty regarding mobile phone-related cancer risks many countries including Germany, France, Austria, the UK and Russia have taken **a precautionary stance** regarding cell phone use, particularly by children and recommend that the risk of exposure to children from mobile phone should be limited by restricting their use of mobile phones for essential purposes only." While your statement of warning to the press regarding the health concerns is admirable, it is evident that unless the HSE follow in the footsteps of the NHS in the UK and publish information leaflets to be distributed to households warning parents of these concerns, parents will remain unaware of the risks and no action will be taken to minimize the health risk or change behavioral patterns. As with fluoride contamination of baby food, parents are not aware of the health concerns regarding mobile phones and children. The prevalence of mobile phone use by children in both primary and secondary schools in Ireland clearly demonstrates this. In my community a considerable number of children attending fifth grade in primary school have a mobile phone.

It is logical, that the same principles of good governance that you applied as Chief Medical Officer to raising concerns regarding exposure of children to mobile phone radiation should also be applied to known health risks, as well as potential health risks from toxins such as fluorides, in particular the exceedance of any tolerable upper exposure limits which have been set for the protection of children and which are exceeded by infants who consume fluoridated baby food in Ireland.

Finally, I request that as Chief Medical Officer for the Department of Health you may advise me of the following;

I am aware of my own fluoride dietary intake and that of my dependents and know the fluoride added to our drinking water supply, under the regulations established by the HSE and implemented by my local authority, is contributing to unsafe levels of dietary fluoride intake for both me and my family. I have established these facts based on a scientific assessment and examination of the fluoride content in beverages and food using an accredited laboratory. As the responsible regulatory authority for the contamination of my drinking water supplies, please advise how I may remove these unwanted toxins from my water supply ?

I require a reply from you to this last question as it is a necessary preventative health measure to limit the exposure of my family to fluoride, in order that we comply with the recommended standards of dietary exposure to this dangerous toxin.

From the research I have undertaken it is not possible to remove this contaminant using typical water filters and it is acknowledged by the WHO that purified water from reverse osmosis water purifier systems is not safe for human consumption.

I look forward to your reply.

Yours sincerely

Declan Waugh

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