From:	ENVIRO
Sent:	January 23, 2013 6:47 AM
To:	Toldo, Beth; declan waugh
Cc:	Ayesha Drouillard; Donna; Peter Vancaulart; Heather Gingerich; Kimberly DeYong; Robert J. Fleming (COF-COF)
Subject:	Windsor City Council submissions on Water Fluoridation-Update
Attachments:	Fluoride and Cardiovascular Disease_Implications for Ireland_Waugh 2013_Third Edition.pdf; Irish Medical Times Nov 2012.pdf; DVGW Statement on the Fluoridation of Drinking Water Edition 8_92.pdf

Submission on Water Fluoridation
For circulation to City Councillors
From Declan Waugh
Environmental Scientist and Risk Management Consultant

Dear Ms Beth Toldo

Greetings from Ireland.

I am writing this as an individual and Environmental Scientist who just 18months ago believed on the basis of blind faith in my public health authority and environmental protection agencies that fluoridation of drinking water was safe. My main area of professional interest in the past decade has been environmental due diligence, risk management, environmental impact assessment and managing an environmental consultancy. For the decade prior to this I was an environmental manager and research scientist for the Mining Industry in Ireland and the EU. I am lucky but not without hard work and enterprise, to have a very successful career with many opportunities to develop my skills and knowledge in the field of environmental science, resource management and technology. I naturally expected officials in positions of responsibility to have similar standards of professionalism and attention to detail as I have maintained myself in my own career to date. It was for this reason, or blind faith in authority that I was of the opinion that fluoridation must be safe. Eighteen months ago as I commenced my examination of this subject, following the birth of our daughter this belief was shattered and since then it has entirely evaporated. The fog has lifted and revealed that the science behind fluoridationis utterly flawed, dangerous and lacking any scientific credibility. Under.no circumstance, to my knowledge has any credibly and unbiased due diligence or risk assessment been undertaken in any country that currently supports fluoridation. Any major report such as the U.S. National Research Councils report (2006) and the UK's National Health Service York Review (2000) only demonstrated the flawed nature of this policy, which both reports identified as not based on proven scientific study and lacking proper examination of health risks.

My examination of this subject began out of concern regarding the enormous disease burden prevalent in Ireland today, especially within my own community in County Cork at the most southern end of Ireland. The island of Ireland is rather unique in that the North is part of the UK and non fluoridated, while the South is literally entirely fluoridated. The Republic of Ireland was the first country in the world to pass mandatory legislation mandating that all public waters supplies be artificially fluoridated. We are perhaps thee most fluoridated community in the developed world with approx 80% of the population consuming fluoridated water. The population on the island is one of the most homogenous to be found in any country in the world, which is useful in epidemiological studies as it reduces confounding factors in regard to race, ethnicity, diet, etc. etc. Their is only one known and established scientific factor that differentiates Northern Ireland from the Republic and that is, exposure to fluoride. Recently the Irish Medical Times asked me to write a piece on cancer incidence in Ireland based on the findings of my report and further

examinations. The link to this is attached below for your records, I have attached the letter as a pdf also for circulation.

What I found is that the risk for bladder cancer was up to 14 per cent higher in the Republic of Ireland (ROI), leukaemia up to 23 per cent, pancreatic cancer up to 22 per cent, skin cancer up to 18 per cent, prostate cancer 29 per cent, oesophageal cancer up to 8 per cent, brain cancer up to 20 per cent and cancer of the cervix and uteruses up to 11 per cent higher compared to NI. Yet remarkably public health bodies in Ireland without undertaking any scientific study and based purely on 'opinion' say that this has nothing to do with fluoride exposure.

Apart from cancers the prevalence of diabetes is 100% higher and we also have much higher incidence of hypothyroidism, cardiovascular disease, respiratory illness and other conditions compared to Northern Ireland and the rest of the European Union or continent of Europe. This is truly remarkable as a bloody and traumatic conflict existed in Northern Ireland for over four decades and the levels of social inequality and poverty were much worst than in southern Ireland. Social depravation, poverty, trauma and stress are all major factors in disease burdens, yet the ROI has much greater disease burdens than Northern Ireland.

The Republic of Ireland also leads the world in neurological illness and are the most medicated population on the planet for treating disease. An astonishing 1 in 3 adults have a chronic illness in Ireland today. Despite this, not one single medical study has ever been undertaken in Ireland to examine whether the mass intoxication of the population with silicofluoride chemicals may in any way be contributing to the catastrophic disease burdens that the country now faces, burdens which are expected to worsen considerably in the next decade. Today my life expectancy is less than that of my grandfather who was born 30 years after the great famine in Ireland.

These are astonishing facts and they are all detailed with appropriate scientific references in my report on the *Human Toxicity and Environmental Impact and Legal Implications of Water Fluoridation,* and follow on reports that are also available to download from my website (link provided below).

It is because of this that as an scientist and active citizen that I have committed myself in the past 18months to attempting to fully understand the possible reasons for the silent catastrophe that is present in my country today. I have devoted the most part of the last 18months to examining every credible scientific article and peer reviewed study available and published books that I can find on this subject. I have reviewed this subject area thoroughly, so much so that the European Commission informed me that they have requested that the WHO pay particular attention to the latest scientific evidence documented in my report an communications when reviewing their guidelines for drinking water again. The President of the European Parliament has written to me personally to say that he has circulated my reports to members within the European Parliament and I am in regular communication with his offices. Last week the Director of the Department of Nutrition for Health and Development of the World Health Organisation contacted me to say that they are indeed reviewing my reports. I have also been requested by the Chartered Institution of Water and Environmental Management to write a number of articles for their members worldwide on this subject to better educate them on the human health and environmental impacts associated with this policy. This I intend to do so in the coming months.

Since writing my main report I have published seven additional reports and numerous further lengthy communications on this subject, the majority of which are available on my website to view and download.

My latest report addresses Fluoride exposure and Cardiovascular disease, which I have attached and which is particular disturbing in its findings. Within two years of commencement of fluoridation in Ireland mortality from CHD increased dramatically and continued to rise until they peaked when over SOpercent of the population were fluoridated. In approximately 10 years the incidence of mortality from CHD increased 80% while in other developed .countries it was reducingby:20/o per annum. As I have fouo_dthe countries with the,J1ighest prevalence ofCHIJ are those that are either artificially fluoridated or naturally fluoridated with excessive fluoride levels in their drinking water. Today for both CHD disease and Respiratory disease only one country in the European continent has higher mortality than Ireland and that is Kyrgyzstan (formerly part of the Soviet Union). In Kyrgyzstan up to 65% of the population are documented as having dental fluorosis and 17% skeletal fluorosis. Exposure to fluoride is the only common denominator for both populations. Irish citizens are the most exposed in Western Europe and Kyrgyzstan in Eastern Europe.

I forwarded this report (attached) to one of Ireland leading epidemiologists and public health academics last week and he replied to me after reading it that he is now convinced that an urgent re-examination of water fluoridation is needed in Ireland.

Whenever I can, in the interests of humanity and the environment I am willing to pass this information on to other communities both here in Ireland and internationally, communities that are slowly waking up to the public health and environmental risks associated with water fluoridation. Local Authorities across Ireland are now demanding an end to fluoridation as a consequence of my reports. If my reports and information can help elected officials in other countries

I am delighted that they may do so and I hope that officials in Windsor City Council will find the time to examine some if not all of this information. My reports offer truly independent thoughts on this subject from an independent voice that is not conflicted with any associations with industry or public health bodies that endorse it. I have undertaken this work voluntarily, without any financial conflict of interest, at some considerable personal and financial cost I might add to myself. When I started my research I had the deeply misleading opinion that anyone who talked about the dangers of water fluoridation were misguided, ill-informed conspiracy theorists. How wrong I was, to my shock and astonishment I have found that some of the most distinguished scientific minds from a broad range of sciences including medicine, dentistry, pharmacology, chemical, environmental and biological sciences have not only raised serious concerns regarding this practice but have signed a petition seeking an end to water fluoridation. Many more have been effective in ending fluoridation in European countries such as the DVGW, the oldest professional technical and scientific water organisation in the world based in Germany with 13,000 members, 400 staff and 3 research institutes. The DVGW were twice asked to provide independent safety and environmental advise by the Government of Germany, in 1970's when they advised to stop fluoridation, which West Germany did, and again in 1990 upon unification of East and West Germany. Up to 1990 five East German States were fluoridated under Soviet occupation. The advice given by the DVGW regarding ending fluoridation provided 7 clear and simply reasons why fluoridation should not be allowed, and it was immediately discontinued by the German Authorities. I have also attached this document for your records, which I hope your colleagues will find of interest in their deliberations on fluoridation in Windsor City.

Speaking as someone who has worked extensively in the mining and extractive industry, fluorspar mining is not environmentally friendly or sustainable. One must consider the overall life cycle pollution resulting from such a policy, including those from production and disposal of pollutants arising from this policy as well as transport emissions and other factors that remain largely hidden from view. In the production of water fluoridation chemicals mining operations are required that leave a lasting and permanent legacy on the environment as does discharging fluoride and silicofluoride pollutant into the environment. The capacity of the earth as with our bodies to accumulate such dangerous substances without significant impact is not limitless.

In ending, it is important to note that in every country in the world that ceased fluoridation programmes dental professionals warned of dire consequences and in ever instance dental health improved to a level never witnessed when fluoridation was practiced and overall health improved almost immediately. This includes countries such as Finland, Sweden, The Netherlands, Germany, China and Japan. I look forward to the day when both Ireland and Canada join this list, and the remaining 94% of the world's population who are not exposed to silicofluoride chemicals in their drinking water.

To download my reports noted above please go to:

http:1/www.enviro.ie/downloads.html

Irish Medical Times, Cancer and Fluoride, LETTER ON REQUEST OF EDITOR
http:1/www.imt.ie/opinion/2012/11/lets-not-di_ute-the-issue-of-our-water-fluoridation.html

Documents Attached:

1. Fluoride and Cardiovascular Disease, Implications for Ireland and Fluoridated Communities. Waugh 2013
2. Letter (Requested by Editor) Irish Medical Times, Fluoride and Cancer Incidence Ireland
3. DVGW German Technical and Scientific Association Statement on Water Fluoridation.

Respectfully Yours and kindest regards to Windsor City Councillors.

Declan Waugh

Declan Waugh BSc. C.WEM. CEnv. MCIWEM. MIEMA. MCIWM. MIOA. Grad El. ALI
Director
Enviro Management Services
11 Riverview
0 Doherty's Rd
Bandon
Co. Cork

Ireland

T:023-8841933
M:086-3853363
E: declan@enviro.ie
W: www.enviro.ie

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Fluoride and Cardiovascular Disease: 2013

Implications for Public Health in Ireland and other Fluoridated Communities

By: Declan Waugh BSc. CEnv. MCIWEM. MIEMA. MCIWM.

Introduction

Cardiovascular disease remains the most common cause of death in Ireland, currently accounting for one-third of all deaths and one in five premature deaths.

Vascular diseases, of which cardiovascular disease is the most common, account for over 40% of all deaths and 37% of deaths under 65 years in Ireland. Approximately 10,000 people die each year in Ireland from cardiovascular disease (CVD) - including coronary heart disease (CHO), stroke and other circulatory disease. The largest number of these deaths relate to CHD - mainly heart attack - at 5,000, with approximately 22% of premature deaths (under age 65) due to CVD. According to figures from the cardiac rehabilitation unit at Wexford General Hospital, the number of deaths from Coronary Artery Disease in Ireland is 60,7 per 100,000, almost twice the EU average of 32.6.[1]

Ireland has the highest rate of premature deaths from ischaemic heart disease (<65yrs) in the European Union[2] and life expectancy still ranks below the EU! 5 average for both men and women.[3]

This article reviews the available information examining how fluoride interferes with heart function, incorporates to the aorta and atherosclerotic plague in coronary arteries, and contributes to cardiovascular disease in general.

Data provided in this document will show how mortality rates from cardiovascular disease increased sharply in Ireland post commencement of water fluoridation. While mortality rates in the past decade have reduced significantly this could not have occurred without the documented four□ fold increase in prescribed medication for cardiovascular disease and increased expenditure in healthcare and intervention. Without such, it can be presumed mortality rates in Ireland would be much higher than they currently are. Apart from the human cost, the cost of cardiovascular disease to the Irish economy - which includes the costs of healthcare, loss in productivity and informal care - is a significant burden.

Given the scientific information ,;urrently l\Vai_la.ble de111cmstratingthat fluoride is a risk factor in cardiovascular disease, as well as diabetes, thyroid disorders, mental depression, skin disorders, obesity and gastrointestinal disorders, in addition to its potential contribution to increased cancer prevalence in Ireland, and observing that the prevalence of many of these conditions in Ireland is significantly above the EU average; it is therefore of the upmost priority that the Government of Ireland take appropriate action and comply with the 'precautionary principle' in ending fluoridation of drinking water and mass fluoride intoxication of the population oflreland immediately.

The few mainland European Member States that did previously fluoridate water supplies have all long since ceased to support such a policy. Where fluoridation was stopped, it was shown to have no negative impacts on the populations dental health and was observed to benefit public health in **their communities.**[4 5 6 7]

The current health behaviour of the Irish population demonstrates that mass fluoride intoxication of the population with untested industrial chemicals is dangerous and is contributing to the enormous health burden of disease now prevalent in Ireland today.

To add to the current crisis the Department of Health recently warned that *"there is a potential epidemic of heart failure in Ireland over the next 10 years "*[8] It is of paramount importance therefore that every precaution must be taken to reduce the exposure oflrish citizens to any unnecessary risk factors, such as fluoridation of drinking water, that is clearly contributing to increasing disease burdens in society.

This paper presents some of the information currently available which clearly demonstrates that fluoride exposure is a contributor to cardiovascular disease. Much of this data has already been provided to the Government of Ireland by this author, however, this paper includes new evidence to support previous communications to the Government that highlighting the health risks associated with water fluoridation using silicofluoride chemicals.

We are also approaching the 100th anniversary of the I9 I6 Rising, a pivotal historic period that led to the establishment of the Irish Republic. At the current time Ireland holds the presidency of the Council of the European Union.

It is lamentable therefore that in 2013 the Government of Ireland continues to enforce the mass medication of its population, mandated by national legislation, using untested industrial chemicals; a policy that every other mainland European country has independently decided, through risk assessment, is unjustifiable, unethical, uneconomical, unsafe and enviromnentally unsustainable.

History of Water Fluoridation and Ischaemic Heart Disease in Ireland

In I962, prior to commencement of water fluoridation in Ireland, mortality for males from ischaemic heart disease was a rate of 190 deaths per 100,000 and 140 per 100,000 for females. In I964, more than 25 per cent of the population of the State were receiving water from fluoridated piped water supplies. This included the greater Dublin area and the adjacent areas on the east coast. Fluoridation commenced in the second largest urban area Cork City and County in 1965andoverthe following seven to eight years all the major urban communities throughout the country were fluoridated.[9]

In 1969,just a few years after commencement of fluoridation the rate of mortality from ischaemic heart disease had dramatically increased to 315 deaths per 100,000 for males and 235 deaths per 100,000 for females, representing an increase of 65% in mortality for this disease in both males and females respectively. By 1979, it had reached a peak of350 deaths per 100,000 for males and 250 deaths per 100,000 for females representing an 84% increase in mortality for this disease in less than a decade after commencement of water fluoridation as illustrated below.

Mor1a1;1y from Ischaemic Heart Disease in Ireland 1950.1965
Age standardised Rates/100,000 population in Mates and Females

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As is evident in the graph, a sharp increase in mortality occurred in 1967 and continued to rise significantly above European averages until 1978, when levels reached plateaued out and from where they eventually started to decline. This dramatic increase in mortality rates occurred in Ireland at a time when age adjusted mortality rates were falling internationally by 2% per annum in the 1970's and 1980's.[10]

While deaths rates have declined since for the period 2000-2004 Ireland had on average 144 deaths from CHD per 100,000 population,which was higher than EU 15 of92 deaths per 100,000 aiidhigher than the Eff21 of 113 deaths per 100,000.[11]

In comparison, the age adjusted mortality rate in the United States, (where approximately 65% of the population consume fluoridated water, compared to 75% in Ireland) is 135.0 deaths per 100,000. The rate for males was 41.6% higher than for females (176.5 versus 103.1 per 100,000 populatt·on, respectively).[12]

Similady the age adjusted mortality rates for fluoridated Australia at 123 per 100,000 are also above the European average. As with fluoridated America and Ireland, the mortality rate in Australia for males at 169 per 100,000 is significant.[13]

The major decline In Ireland has occurrec/ in the last dec11de, brought about largely by increased clinical intervention, medication and behavioral change. It has been estimated that half of the decrease in death rates can be attributed to treatments and interventions.[14] If it were not for fluoridation, it is most likely that mortality rates would have levelled off earlier and not have risen to the record levels attained in the 1970's, at a time in stark contrast when significant decreases in mortality were being observed in other countries.

Current Status

It is well known that life expectancy in Ireland compares poorly with that in other developed countries. Remarkably life expectancy for Irish men at age 60 in 1985-1987 (16.0 years) had changed little from that for 1925-1927 (15.8 years).[15] Ireland ranks below the EU15 average for life expectancy for both men and women.[1]

Any gains in life expectancy through lower death rates from infectious diseases such as pneumonia and tuberculosis were cancelled out by increased death rates from cardiovascular disease (CVD).[17]

Ireland currently has the highest rate of premature deaths from ischaemic heart disease (<65yrs) in the European Union[18].

In 2010 it was estimated that more than 79,000 (2.4%) adults aged 18+ years in RoI have been told by a doctor in the previous 12 months that they have CHD (clinically diagnosed CHD). This excludes undiagnosed CHD and is likely to be an underestimate of the number of people with the condition.[19]

In 2007 nearly 131,000 adults hl!d ever had a Coronary Heart Disease (CHD, angina and heart attack). By 2020 this is expected to rise to over 195,000 people - an additional 65,000 people (a 50% increase in less than 15 years).

In 2007 almost 59,000 adults have ever had a stroke. By 2020 this is expected to rise to almost 87,000 people - an additional 28,000 adults (an increase of 48% in less than 15 years).[20]

These figures do not include individuals who have undiagnosed cardiovascular disease. International research has shown that 50% of men and 64% of women who have had a fatal heart attack or stroke never knew they had the disease.2[1]

From 2000 to 2004 Ireland had on average 144 deaths from CHD per 100,000 population, which was higher than EU 15 of92 deaths per 100,000 and higher than the EU 27 of 113 deaths per 100,000.[22]

The DepartrnentofHealth, National Cardiovascular Health Policy Report[23] published in 2010 compares cardiovascular health data for Ireland with other EU Member States from the years 2003 to 2007 across all ages.

During this time Ireland had a reduction on the years 2000-2004 to on average 118 (age-standardised) deaths from ischaemic heart disease per 100,000 population annually.

Mortality was however higher than the EU15[1] rate of 80 deaths per 100,000 and higher than the EU27[2] rate of 101 deaths per 100,000.

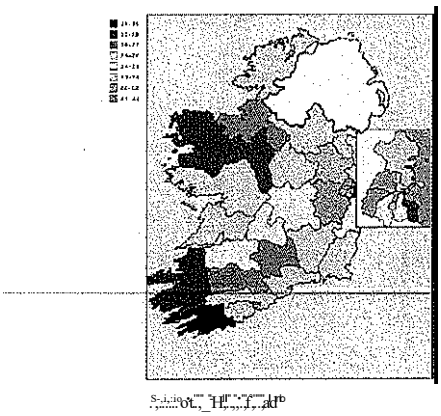
The Department of Health reported that in regard to premature deaths, ischaemic heart disease death rates annually in Ireland averaged 25 per 100,000, compared to 18 deaths in the EU 15 and 24 in the EU 27.

The Department of Health further observed that this could not have been achieved without the increasing workload in health services in the hospital, primary care including a four fold increase in the use of prescribed cardiovascular medication.

Geographic Variation in CHD

There is a wide geographic variation in mortality rates from cardiovascular disease in Ireland. This is illustrated in Figure 3 below. The incidence rates do not include undiagnosed CHO.

Percentage of Adults with Clinlcally Diagnosed Coronary Heart Disease in the previous 12 months (Local Heatlh Offices. Republic of Ireland 2010)



The geographic spread for CHO largely mirrors that for other major diseases in Ireland such as diabetes, cancer and neurological illness. The areas with the highest prevalence of disease burdens are largely those where drinking water is both soft (low in calcium) and fluoridated.2[4]

It is interesting to note that the most Southerly part of Ireland has the highest incidence of CHO. Drinking water in large parts of South and South East Ireland including West Cork located in the southern tip of (the area identify as red on the map above) Ireland, are extremely soft with less than 20mg/L calcium. Similarly soft drinking water is found in large parts of geographic areas such as Mayo, Donegal, Kerry, Wexford, Waterford and Roscommon. All of these counties have elevated CHO significantly above the National and European average.

Comparison with England

In comparison, the highest deaths through CHO in England are in the North West of England with a death rate of 93.2 per 100,000. The figure for the South West of England is 67.4 per I00,000. CHO rates in England are lower than in the rest of the UK. Over 5% lower for men and 20% lower for women in England than in Northern Ireland. 20% lower for men and 50% lower for women in England than in Scotland. The data from England is remarkable as mortality rates for CHO are geographically located in areas where water fluoridation programmes are currently in use. It is to be noted that these areas also largely reflect those with greatest social inequality in England.

The exception being Cornwall in the South West of England, however it is known that drinking water in this region has low calcium and is defined as soft water. This would explain the high incidence of CHO in this region.[25]

[1] EUIS data refers to 9 countries in 2007 and 12 in 2006 who had reported mortality data.
[2] EU27 data refers to I9 countries in 2007 and 23 in 2006 who had reported mortality data.

Nevertheless the correlation between fluoridation of public water supplies programmes, fluoride content in drinking water and CHD is significant, as illustrated below.

CHD premature mortality ratesper 100,000 and l=luoridation stat E lam:l, 2008/10

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Comparison with Northern Ireland and Europe

According to figures from the cardiac rehabilitation unit, Wexford General Hospital, the number of deaths from Coronary Artery Disease in Ireland is 60,7 per 100,000, almost twice the EU average of32.6.[26] In comparison the age standardized death--rate-fromCHD in Northern Ireland is 60.44 for men and women 21.01.

However it must be noted that poverty, stress and social conflict play a major role in heart disease and this is reflected for the data for NL Significantly higher CHD prevalence is noted in the geographic areas with the highest social inequality, poverty and unemployment. These same areas not only represent those that are the most socially deprived but also where conflict and trauma were most prevalent during the *'Troubles'* in Northern Ireland. For example significantly higher CHD rates for males are to be found in Derry (80.09), Belfast.(89.05) and Ballymena (115.45) compared to more rural areas such as Castlereagh (30.08) Antrim (24.9) and Moyle (33.48).[27]

What is also remarkable about the data for Northern Ireland is that the only two locations in Northern Ireland where fluoridation was introduced and continued for approximately 30 years, in Tandragee Co. Armagh and Hollywood, County Down, both had significantly higher rates of premature mortaility compared to the their adjoining local authority districts.[28]

In comparing CHD in Ireland with Europe the Age-standardized Disability-adjusted life years (DALYs) per 100,000 for CHD, stroke and other CVD, provides further insights to the impact of CHD and the gap between Ireland and other European Member States. The DALYS for CHD for Ireland is calculated at 671 compared to the UK (657), Iceland (470), Norway (503), for Sweden (506), Denmark (478),.Germany (574), France (259). Spain (367) and the Netherlands (460). A similar pattern is provided for CVS.[29]

ConfoundingFactprs;

There are many compounding factors in CHD, some of these are discussed in the following section with comparisons where appropriate between Ireland with other EU Member States.

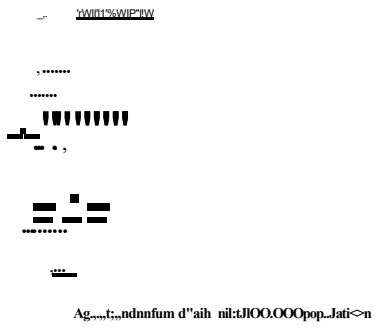
Influence of Smoking

Tobacco, like tea is a significant source of fluoride and is a major source of dietary fluoride intake. In Europe, about 20% of deaths from CVD in men and about 3% of deaths from CVD in women are due to smoking. The equivalent figures for the 25 countries that made up the EU in 2006 (EU-25) are 16% and 5% respectively. For the period 1995-99 Ireland had one of the lowest prevalence of smoking for adults in EU at 32.4 percent, compared to France (35%), Germany (43%), Denmark (35.4%), Italy (33.8%), Norway (33.4%), the Netherlands (38.9%),,Spain (42.8%) and Switzerland (39%). [0]

It is obvious that one would expect countries with higher smoking prevalence's than Ireland to have higher CHD mortality rates. The difference between CHD mortality rates for Ireland and other European countries should be considerable less than they currently are as historically higher smoking prevalence in other European Member States should have seen a marked increase in CHD mortality rates from smoking compared to Ireland. Yet this is not the case.

What is extraordinary however is that in 2008, Ireland had the highest death rate from respiratory disease in EU, almost twice the EUaverage.[31] In the entire league of European countries only Kyrgyzstan (formerly part of the Soviet Union) has a death rate from respiratory disease higher than Ireland.[32] Remarkably approximately 69% of the population in Kyrgyzstan has dental fluorosis with up to 16% suffering from skeletal fluorosis.[33] This clearly demonstrates that the population is chronically over-exposed to fluoride and that fluoride is a significant contributor to disease burdens.

Age-standardised death rates per 100,000 population from diseases of the respiratory system by sex, 2004, **selected European countries:** Source WHO 2007



It is not surprising to find that according to the latest WHO data published in April 2011 Coronary Heart Disease Deaths in Kyrgyzstan reached 12,884 or 30.19% of total deaths. The age adjusted Death Rate is 349.39 per 100,000 of population ranking Kyrgyzstan third in the world for Cardiovascular disease.[34]

It is significant therefore the two coiirifries in Eiifope with the highest exposures to fluoride have by far the highest mortality from both cardiovascular and respiratory diseases. High mortality rates both these diseases are also recorded for the United States of America where the majority of the population are also exposed to fluoridated water.[35]

The ability of fluoride to impair the bod1·es ·immune system[36] may explain

help explain this anomaly, reducing the ability of the body to fight disease.

In regard to respiratory disease it is important to note that animal studies have demonstrated that lung tissues presented emphysema and lung parenchyma inflammation associated with loss of alveolar architecture in the second generation of animals exposed to fluoride in drinking water.[37]

The inflammatory effect of fluoride exposure has also been demonstrated in human lung epithelial cells.[38]

It is evident therefore that while smoking is contributing to CHD amongst the population additional factors are influencing the significantly higher burden of CHD and respiratory disease present in Ireland.

Alcohol

Alcohol use is related overwhelmingly detrimentally to many cardiovascular outcomes, including hypertensive disease (Taylor et al., 2009)[39], haemorrhagic stroke (Patra et al., 2010)[40] and atrial fibrillation (Samokhvalov, Irving & Rehm, 2010)[41].

For ischaemic heart disease and ischaemic stroke, the relationship is more complex. Chronic heavy alcohol use has_been associated uniformly with adverse cardiovascular outcomes (Rehm & Roerecke, 2011)[42]. But, on average, light to moderate drinking has a protective effect on ischaemic diseases (Roerecke & Rerun }[43]This effect is found to be equal for people who just drink beer or who just drink wine (Di Castelnuovo et al., 2002)[44]

The detrimental effects of heavy drinking occasions on ischaemic diseases are consistent with the physiological mechanisms of increased clotting and a reduced threshold for ventricular fibrillation which occur following heavy drinking (Rehm et al., 2010).[45]

People who are socially disadvantaged people or who live in socially disadvantaged areas experience more harm per gram of alcohol consumed than the better-off (Rehm et al., 2009)[46].

In Finland, areas with higher levels of manual workers or of unemployment and areas with lower social cohesion had higher levels of alcohol-related mortality among men aged 25---o4 years (Blom ren, Martikainen & Makela, 2004). [7]

The level of consumption of a country level varies throughout EU. Figure 3 below illustrates the variation across the EU.

Adult (15+ years) per capita alcohol consumption in litres of pure alcohol, EU countries, 2009

Source: Alcohol and the European Union, World Health Organisation,2012

The proportion of alcohol-attributable mortality in Ireland to all deaths in the group aged 15-64 years is <10% for men. This is significantly less than the EU average and below Germany(l3%), Spain(l 2%),Finland(l 6), France(l 6),

Austria(l6), Poland(l6), Luxemburg(l4%), Denmark(l4%), Switzerland(!1.5%) & Belgium(! I%).

For woman mortality from alcohol attributable mortality in Ireland is at <7% which is also below the European average. The highest rates of mortality are in the Baltic regions where up to 25% of deaths are attributable to alcohol.

The WHO report on alcohol in the European Union (2012) estimates that there are approximately 110,000 alcohol attributable deaths across EU each year.[48] For men, the highest contribution to alcohol-attributable mortality is made by liver cirrhosis (26%) and unintentional injury (23%), followed by cancer (16%), intentional injury (15%) mental and neurological disorders (8%) and cardiovascular diseases last (7%).

For women, more than two thirds of alcohol-attributable deaths arise from liver cirrhosis (37%) and cancer (31%) (the largest proportion of which concerns breast cancer, with 21%), with cardiovascular disease other than ischaemic heart disease as a distant third cause {II%). Moderate alcohol consumption was also seen to have a beneficial effect on ischaemic heart disease.4[9]

. 13asedonthisi11formationit.can be concluded that while alcohol consumption in Ireland is contributing to CHD, the significantly higher prevalence of alcohol related mortality in other EU countries, as noted above, should see CHD death rates higher in EU than in Ireland.

Yet this is not the case, not only does Ireland have the highest rate of premature deaths from ischaemic heart disease (<65yrs) in the European Union[50] but significantly higher mortality from CHD than the EU 15 or EU 27 countries, where alcohol related deaths and their contribution to CHD deaths are much higher than Ireland.[51]

What is also relevant however is that draught beer sales in Ireland are much higher than in other EU countries and beer, as with any beverage product produced in Ireland, is most likely to be fluoridated as manufacturers use fluoridated public water supplies. Alcohol consumption in Ireland, compared to other EU countries is therefore a potentially significant additional dietary source of fluoride.

Vitamin D 12

Recently Vitamin D deficiency has been identified as a potential risk factor for many diseases not traditionally associated with Vitamin D, such as cancer and CVD.[52]

Vitamin D deficiency has been associated with CVD risk factors such as hypertension and diabetes mellitus, with markers of subclinical atherosclerosis such as intima-media thickness and coronary calcification, as well as cardiovascular events such as myocardial infarction and stroke in addition to congestive heart failure. It is plausible to suggest that vitamin D deficiency contributes to the development of CVD through its . association with other known risk factors, such as diabetes and hypertension.

The differences in CHD between Northern, Southern and Western European countries and Central and Eastern European Countries would appear to support this interaction. It is evident that Southern European countries still having lower death rates from CVD than Western European countries apart from Greece and Malta

which have significantly higher mortality rates than other southern European countries for CHD. [53]

There are however significant differences between Ireland and other Northern European countries including England, Iceland, Denmark, Sweden and Norway.

This can be illustrated in the figures for Age-standardized Disability-adjusted life years (DALYs) per 100,000 for CHD, stroke and other CVD in Europe. For Ireland the figure is 671 compared to UK (657), Iceland (470), Norway (503), Sweden (506), Denmark (478), the Netherlands (460), and Germany (574), while the figures for France, Spain and Portugal are 259 and 367 and 431 respectively.[54]

It is likely that V Dl2 is playing a role in increased CHD in Ireland but these figures would suggest that it is limited and other factors dominate.

Obesity and Diabetes.

Fluoride is a risk factor in both the development of obesity and diabetes." It is now known that biologically relevant doses of fluoride results in impairment of glucose tolerance or increased blood glucose and decreased insulin synthesis.[56] Both of these conditions are major contributors to diabetes and obesity which have also reached epidemic proportions in Ireland. In Ireland, the incidence of type I diabetes is 16.8 per 100,000, which is above the European average.[57]

Diabetes is a condition in which the amount of glucose in the blood is too high because the body is unable to use it properly. Normally, the amount of glucose is carefully controlled by the hormone insulin, which is produced in the pancreas.

The prevalence of obesity in Ireland is among the highest in the EU 27.[58] Obesity in! 8-64 year old adults increased significantly in Ireland between 1990 and 2011, from 8% to 26% in men, and from 13% to 21% in women, with the greatest increase observed in men aged 51-64 years.59

Notwithstanding other lifestyle and dietary factors this subgroup also represents those with the highest lifetime exposure to fluoride in the Republic of Ireland since commencement of artificial fluoridation in mid 1960's. It is also worth nothing that figures for obesity in Ireland are considerably above the EU average.

It is now accepted that a high fat diet and obesity induce endoplasmic reticulum (ER) stress in liver, which suppresses insulin production and contributes to diabetes.[60]

The Russian Academy of Sciences recently published a review[61] of scientific literature on the molecular toxicity of fluoride and noted how fluoride induces endoplasmic reticulum (ER) stress. The endoplasmic reticulum (ER) is a cellular compartment responsible for multiple important cellular functions including the biosynthesis and folding of newly synthesized proteins destined for secretion, such as insulin. Accumulating evidence suggests that ER stress plays a role in the pathogenesis of diabetes, contributing to pancreatic -cell loss and insulin resistance. ER stress has also importantly been linked obesity and insulin resistance in type 2 diabetes.

Disturbances in the normal functions of the ER lead to cell death if ER dysfunction is severe or prolonged. Important roles for ER-initiated cell death pathways have been recognized for several other diseases, including hypoxia, ischemia/reperfusion injury, neuro-

degeneration, diabetes and heart disease.[62]

Researchers Menoyo et al.[63] and Lin et ai.[64] demonstrated the effect of fluoride on glucose metabolism using in vivo and in vitro experimental models and confirmed that biologically relevant doses of fluoride result in impairment of an oral glucose tolerance test and decreased insulin synthesis.

It has also been reported by Montalvo et al. [65] that fluoride exposure regulates insulin gene expression in murine beta pancreatic cells, resulting in reduced insulin secretion.

Further studies have shown that fluoride exposure may contribute to impaired glucose tolerance or increased blood glucose.[66],[67],[68]

The influence of fluoride in contributing to diabetes and obesity must consequently to be regarded as a significant risk factor in the high rates of CHD in Ireland. Given these facts the contribution of mass fluoridation of the population to increased CHD cannot be excluded.

An examination of the fluoride as a risk factor in both diabetes and Obesity in Ireland hasJreviously been examined by Waugh.

l-fypothyroicli. m

In humans, effects on thyroid function have been documented with fluoride exposures of 0.05-0.13 mg/kg/day when iodine intake was adequate and 0.01-0.03 mg/kg/day when iodine intake was inadequate. [70]These ranges are well within the exposure levels experienced by the general public in Ireland. Therefore it is a scientific fact that fluoride exposure of sensitive subgroups of the population will clearly impact on the thyroid function of some **conswners.**

Hypothyroidism is a clinical state resulting from an insufficient amount of circulating thyroid hormone to support normal body function. It may exist in utero or develop in infancy, childhood or even in adult life. The prevalence of unsuspected overt hypothyroidism, defined as the combination of biochemical and clinical findings of hypothyroidism, ranges from 1-18 cases per thousand persons.

Ireland has the highest incidence of congenital hypothyroidism (CHT) in the EU.[71],[72] The incidence ofCHTwas 1 case per 2296 live births in the Republic oflreland (ROI) in the past decade with increasing numbers over recent years.[73] The Global mean incidence for Congenital hypothyroidism (CHT) is 1/3800 with a reported incidence of 1:3500 in Caucasian populations.

Subclinical hypothyroidism (SCH), affects about one in six people over the age of 65 in Ireland and has been linked to various health problems, such as heart attacks and strokes, in later life.

Subclinical hypothyroidism is considered a strong risk factor for later development of overt hypothyroidismassociate subclinical thyroid dysfunction with changes in cardiac function and corresponding increased risks of heart disease.[74],[75],[76]

Subclinical hypothyroidism is associated with increased cholesterol concentrations increased incidence of depression, diminished response to standard psychiatric treatment, cognitive dysfunction, and, in pregnant women, decreased IQ of their offspring.[77],[78]

The incidence of hypothyroidism prevalent in Ireland must consequently to be regarded as a significant risk factor in the high rates of CHD in Ireland.[79] This obviously has major implications for water fluoridation, as biological relevant concentrations of fluoride are known to contribute to this disease.

Water Hardness & Calcium

The consumption of soft water is associated with increased risk of cardiovascular mortality from cardiovascular, ischaemic heart and **hypertensive heart disease.**[80, 81, 82, 83, 84]

Calcium levels in drinking water are also of significance in fluoride absorption and fluoride retention in humans. Fluoride has been implicated in disturbing the functionality of calcium, both directly[85] and indirectly in interaction with Vitamin D.[86] Hammond[87] found that any cause of hypocalcemia or vitamin D deficiency can lead to secondary hyperparathyroidism (elevated PTH) in an attempt by the body to maintain calcium homeostasis.

It is also now known that secondary hyperparathyroidism in response to calcium deficiency may contribute to a number of diseases, including osteoporosis, hypertension, arteriosclerosis, degenerative neurological diseases, diabetes mellitus, some forms of muscular dystrophy, and colorectal carcinoma.[88]

In high calcium waters most of the fluoride is excreted while in low calcium waters the majority of fluoride is absorbed; resulting in elevated blood plasma fluoride levels, and retention of fluoride in various organs of the body.[89]

Furthermore Dr. G. W. Rapp, Professor of Biochemistry and Physiology, noted that multiple smaller doses of fluoride (such as by drinking fluoridated water) will result in greater retention of fluoride than exposure to a single large dose.

Consequently dietary retention of fluoride will vary considerably by individual depending on the source and chemistry of drinking water that is fluoridated, the individuals metabolism and nutritional health.

The indirect action of fluoride decreases calcium absorption from the gastrointestinal tract increasing in the body's calcium requirement. If dietary calcium is inadequate to support the increased requirement, the response is an increase in secondary hyperparathyroidism.[90]

This view is supported by Krishnamachari in his review[91] when he found that In the presence of inadequate calcium, fluoride directly or indirectly stimulates the parathyroid glands, causing secondary hyperparathyroidism leading to bone loss.

It is also now accepted that altered calcium homeostasis is recognized as a key pathophysiological mechanism in heart failure, leading to altered contractile function and transcriptional activity.[92]

Calciumhomeostasis dependson efficient energy-driven calcium and sodium pumps, while calcium concentration in tum determines energy expenditure through cellular ATPases and mitochondrial dehydrogenases. Disturbances in these finely controlled cellular processes make the myocyte enter a vicious cycle of energy mismatch and calcium dysregulation that may turn out to be highly detrimental.[93]

Given the sharp increase in CHD post water fluoridation and the geographical association of CHD with low calcium areas of Ireland, the role of water fluoridation and the bioavailability of fluoride in low calcium drinking waters must therefore be considered a risk factor in the high prevalence of CHD in Ireland.

This evidence of high CHD in communities that are fluoridated in England supports this view. The widespread implementation of water fluoridation in Ireland is the only known variable and identifiable risk factor that is present in Ireland and absent in mainland European countries. Its contribution to CHD cannot be overlooked.

Homocysteine

There are a number ofrisk factors associated with cardiovascular disease including homecysteine.94,95,96 Homocysteine is an intermediate product of methionine metabolism. Any substance that may inhibit secondary metabolism of methionine would result in increased homocysteine levels resulting from less homocysteine being metabolized into (L)-Cystathionine.

Fluoride is known to be an inhibitor of enzymatic activity and research has identified fluoride as an inhibitor of homocysteine hydrolase.[97]

Inhibition ofhomocysteine hydrolase would result in cellular accumulation of homocysteine9B and therefore contribute to the development of cardiovascular disease.

The impact of fluoride on homocysteine must consequently to be considered a risk factor in the high rates of CHD in Ireland.

Fluoride and Heart Physiology

Research published in 20 I0 demonstrated that fluoride also affects the aorta (main artery) and heart in ways that lead to increased heart attacks. 99,100 This confirms earlier studies showing that high blood fluoride levels have an effect on body calcium, leading to calcification of the aorta and other arteries.[101,102]

Animal studies by Ebert et al.[103,104] demonstrated that fluoride exposure resulted in retarded development of heart muscle and inhibition of heart function in developing chic embyros.

Research undertake by Spratt[105] concluded that primary site of fluoride action was enolase, which is distributed predominantly in the heart and skeletal muscles and is a biomarker for myocardial damage.

In addition to enolase inhibition, fluoride is recognized as a potent inhibitor of non-specific phosphatases and mitochondrial adenosine triphosphatase.[106,107]

Slater & Bonner[108] found succinic dehydrogenase to be the site of fluoride inhibition in the succinoxidase system of heart-muscle preparations.

Subsequently it has been found that a depression of all known energy liberatingreactions in the heart may play an important role in the further development of chronic and acute heart disease.[109] The implications for cardiovascular health for a population of increasing exposure of a population, through addition to drinking water, of a compound that is known to inhibit both glycolysis and mitochondria respiration are therefore significant.

Turla et al.[110] observed that fluoride inhibits calmodulin, loss of calmodulin

activity has been linked to contractile dysfunction which canses congestive heart failure as characterized by a high incidence of Sudden Adult Death Syndrome (SADS.)[111]

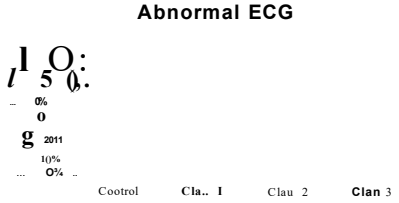
Varol et al. examined the effect of fluoride exposure on cardiovascular system in a clinical setting. and observed that elastic properties of ascending aorta were impaired in patients with endemic chronic fluorosis and that chronic fluoride toxicity can cause aortic stiffness in patients as well as ventricular diastolic and global dysfunctions.[112, 113]

Furthermore Varol et al. found that fluoride toxicity can cause atherosclerosis at molecular level, as well as aortic stiffness and disturbed ventricular distensibility at clinical level. [114]

Research has also demonstrated that fluoride accumulates in aorta vascular walls and that a significant correlation exists between fluoride uptake and coronary calcifiation.11s

Further research has shown that the heart beat rate slows, and heart rate abnormalities increase, in direct proportion to increasing fluoride levels. Since fluoride is a cumulative poison, lower levels of fluoride will have a more subtle long-term effect, thus increasing heart problems and other disease burdens within society.

Due to the that fact that fluoride bioaccumulates in the human body over a lifetime even relatively low levels of used for water fluoridation, taken in additon to other dietary sources of fluoride the burden or toxic affect can easily reach the "Class I" level (shown in the chart below that can contribute to this effect). Fluoride's effects were evident at water levels of 0.2mg/L or more ofFluoride.[116, 117]



This supports the findings from the earliest days of fluoridation in the USA which found that following the introduction of fluoridation, deaths from heart attacks significantly increased in fluoridated communities,
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The data from the USA has appears to collerate with CHD data for the England where it can be seen that the highest prevalance of CHD is geographically located in areas where water fluoridation programmes are currently in use.

Ithas also beendocumented by Professor t. Takamoi-i arid hi-s researchers in Japan that fluoride damages the heart muscle, especially in subJects deficient in Vitamins A and D.[1 1] They further observed that fluoride decreases the energy building glycogen in the muscles,[122] and that it adversely affects the functions of the kidneys.[123]

Dr. Mitsugi Hirao, another member of the research group, produced anemia and abnormal changes in the bone

marrow by fluoride.[124] He recorded an increase in blood platelets, an indication of a disturbance in the clotting mechanism of blood. These experiments correlate with clinical observations by Dr. Waldbott who measured on patients with fluorosis, significantly elevated blood platelets, at levels multiples above what would be considered normal.[125]

Dr. Albert Schatz, discoverer of the antibiotic Streptomycin, which was the first antibiotic remedy used to treat tuberculosis and a number of other diseases, and a distinguished recipient of the Rutgers medal in 1994 (for his contribution to medicine) investigated mortality rates in Chile pre and post commencement of water fluoridation programmes in the 1960's and found that fluoridation of drinking water resulted in increased death rates in Chile.

He demonstrated that poor, malnourished children, especially infants, are the most sensitive barometer of fluoride toxicity. Dr. Schatz examined the data for the three "test" cities in Chile including, Curico, (F I ppm), San Fernando (F 0.0 ppm), and La Serena (0.67 ppm) and noted that the only possible conclusion was that fluoridation was causing significant numbers of deaths.

In exa111ini11gtlie deati,sres11lting from congenital malformations as a percentage of the total number of deaths in the three test cities, he found that Curico the optimally fluoridated community had 244% more such deaths than San Fernando, and 94% more than La Serena while infant mortality rates in Curico were 69% greater than in San Fernando and La Serena.

Research undertaken by Dr. Schatz and supported by Dr. Albert W. Burgstahler of the University of Kansas Department of Chemistry, demonstrated that exposure to low levels of fluoride was a contributory cause of sudden infant death syndrome (SIDS), particularly within the lower income communities where poor nutrition was already prevalent.[126] [127]

On the subject of infant deaths, researchers at the New York State University (Department of Epidemiology and Biostatistics,School of Public Health).documented that municipal water fluoridation causes more premature births, after controlling for age, race/ethnicity, neighbourhood poverty level, hypertension and diabetes.[128]

The impact of fluoride on heart function and physiology must consequently to be regarded as a significant risk factor in the high rates of CHD in Ireland.

lnjlammato1y Response

Fluoride exposure has been implicated in inflammation. Inflammation is the first response of the immune system to infection or tissue damage, leading to the protection of the human body against these insults.

As noted in the review by Barbier et al[129] chronic inflammation is hannful and has an important role in the development of several chronic diseases such as diabetes and atherosclerosis, both of which contribute significantly to CHD.

The review further discusses how fluoride contributes to inflammatory processes that may play a significant role in cardiovascular disorders and recommends more research be undertaken on the role of low to moderate fluoride exposure in vascular disease.

An article published by Ma et aJ.130 (2012) investigated the effect of exposure to fluoride alone on inflammatory response in rabbit aorta. It was found that fluoride increased the expression ofVCAM-1, P-sel, MCP-1, IL-8, and IL-6 at the RNA and protein levels. All of these are now known to play a critical role in development of heart disease[131,132,133,134,131,136,137,138].

The role of fluoride in inflammatory response mechanisms must consequently to be regarded as a significant risk factor in the high rates of CHD in Ireland.

Oxidative Stress

Oxidative stress is a recognized mode of fluoride action.[139] Oxidative stress is also related to the pathogenesis of many chronic disorders including cancer, inflammation, and neurological diseases.[140]

Researchers Varol et al. reported that in addition to fluoride exposure causing oxidative stress, it may have an important role in cardiovascular disease.[141] He also observed that in addition to promoting inflammatory mechanisms, oxidative stress contributes to atherosclerosis, vascular stiffness, and myocardial cell damage. Researchers have also found that oxidative stress and inflammation are important pathophysiological mechanisms involved during ischemic stroke.[142,143]

In addition endothelial dysfunction and vascular disorders have been associated with fluoride exposure in humans.[144,145]

According to Barbier et al.*"the data suggest an important role played by factors related to oxidative stress and vascular inflammation, providing fature directions for research into the cardiovascular effects of fluoride* ***exposure.*** "[146]

The role of fluoride in oxidative stress must consequently to be regarded as a significant risk factor in the high rates of CHD in Ireland.

Dietary Intake of Fluoride

The amount ofbioavailable fluoride will also depend on the total dietary intake which will not be the same for any two individuals. For example high tea drinkers, smokers as well as fish eaters and consumers of processed food will ingest more fluoride than non tea drinkers, non smokers and vegetarians or red meat eaters.

Infants will retain more fluoride due to the developing kidneys not been able to remove fluoride from the body and through the consumption of formula milk or other beverages made from fluoridated water[147].

Similarly diabetics are a high risk group to the toxicity offluoride[148], as are active sportsmen and woman who consume much larger volumes of water daily.[149].

Finally once cannot control for fluoride itake from prescribed medication, which can be significant as many pharamacautical drugs are fluoride based medications. The EFSA have estimated that up to 75% of an infants total dietary intake may come from prescribed medication at any one time_1,0

The dietary intake of fluoride in Ireland is expected to be much higher than the European average due to a combination of water fluoridation, (nnly EU country with a national policy mandating all public water supplies are fluoridated) high consumption of tea (highest in World), high prevalence of bottle fed infants (highest in EU), high consumption of fluoridated alcoholic

beverages such as draft beer produced in Ireland, high prevlance of smokers (tobaccco contains very high levels of fluoride) and high level of prescribed medication (highest in EU) in Ireland.

Dental Fluorosis

Dental Fluorosis is a biomarker for CHD. Professor Takamori's research team observed that children with dental fluorosis have a higher incidence of heart damage and an increase in abnormal heart rhythm than those without fluorosis.151 These observations have been supported by studies conducted by Wang et al. in China.152

This is extremely worrying as the NHS York Review, undertaken for the Chief Medical Officer of the UK, concluded that in communities where artificial fluoridation or high natural fluoride levels was present a very significant percentage of the population were overexposed to fluoride, resulting in a high level of dental fluorosis amongst the population.

The NHS York Review found that in fluoridated communities up to 48% of the population may experience dental fluorosis. [153]

A recent EU study funded under the **FLINT Project** demonstrated that children in Ireland have the highest prevalence of dental fluorosis in the EU.

The study also compared dental fluorosis levels in both fluoridated and non-fluoridated communities in Ireland and found that for children up to age 8 in fluoridated areas up to 24% had abnormal teeth due to exposure to fluoride.

For children up to 12 years of age, 37% had abnormal teeth due to fluoride overexposure. In comparison, for children up to age 8 living in non fluoridated communities < I0% had abnormal teeth and for children up to age 12 approximately 17% had abnormal teeth.

Astonishingly the study found that the level of dental fluorosis was I00% higher in fluoridated areas compared to non-fluoridated communities.

Not surprisingly, the EU study also found that Ireland had the highest level of dental fluorosis amongst children and teenagers.

Given the previous findings in the Japanese study and the alarmingly high prevalence of dental fluorosis in Ireland, this presents an alarming biomarker of future health burdens for society and the healthcare system in Ireland.

Concluding Remarks

The distinguished scientist Dr. Schatz believed that **"fluoridation of drinking water is not safe at any level" and** believed that *"artificial fluoridation of drinking **water** may well dwarf the thalidomide tragedy, which was dramatic because it produced crippled children who are living testimonials to what that drug has done. Many victims of artificial fluoridation, on the otha hand, die quietly during the first year of their lives, or at a later age under conditions where their deaths are attributed to some other cause."*[154]

Furthermore Dr. Schatz stated: *"(b)ecause artificial fluoridation causes deaths among individuals who are for one reason or another more sensitive to fluoride toxicity than the total population taken as a whole, the controversy over whether fluoridation*

does or does not reduce caries is purely academic. It is criminal to implement a so-called public health measure which kills certain people even if it does reduce tooth decay in some of the ***survivors.***

In an affidavit[155] dated 1993 Dr. Schatz gave sworn evidence that *"(i)t is my best judgment, reached with a high degree of scientific certainty, that fluoridation is invalid in theory and ineffective in practice as a preventive of dental caries. It is dangerous to the health of consumers.* "

Given the observations of Dr. Schatz and the additional information provided in this document it is not surprising to find that Ireland (the only country in the EU with a mandatory legislative policy requirng artificial fluoridation of all public water supplies) has the highest prevalence of mortality from ischemic heart disease in all of the European member states.

The Department of Health recently stated *"Current cardiovascular disease risk profiles in Ireland, must now provide a national 'wake-up call' to the health sector and beyond - that the cardiovascular health of the nation is in a precarious state. Cardiovascular health needs to be robustly addressed at both population and individual* ***level."*** [156]

This is certainly the case and it is about time that the Irish Government and its Agencies "woke up" to the public health dangers posed by water fluoridation. These were previously comprehensively examined by Waugh in his report of March 2012 and have yet to be adequately and independently assessed by a panel of suitably qualified experts in Ireland.

According to Dr. Eoin O Brien, Professor of molecular pharmacology, University College Dublin, deaths rates in Ireland from CVD will soon begin to rise *"pointing towards a dismal epidemic for future generations".*[157]

The risk group that he refers to represent individuals born since 1965 who are the longest exposed to the dangers of mass fluoridation. They are a generation exposed since birth to fluoride and silicofluorides compounds, providing experimental proof of the biological effects of artificial fluoridation on the health of a population.

What is particularly disturbing is that not only has Ireland the highest mortality and incidence of CHD in EU but diabetes and hypothyroidism, neurological disorders and certain cancers. Where fluoride is a known risk factor in each of these diseases and with a high prevalence of these diseases now present in the population of Ireland, increasing their exposure to fluoride through mass fluoridation is not only unwise but unsafe. Clearly, it is now evident, with a tsunami of health crisis facing the country, that the blunt, ineffective and dangerous policy of fluoridation should be discontinued. This is particularly the case with current and predicted future rises in CHD, especially knowing what is now known about fluoride, silicofluorides and their affect on the heart as well as other organs such as the thyroid, kidneys, pineal gland and brain.

Fluoride is now well acknowledged as an accumulative toxin with detrimental impacts on health that accumulates over time in calcified tissues such as bone and soft tissues.[158] Fluoride has been identified by Harvard researchers as a developmental neurotoxin.[159] This is a matter of great concern given the

findings of Dr. G.W Rapp who documented that "the fluoride ion crosses the placental barrier" and who noted "the importance of this is that the fetus has already accumulated fluoride during its development." [160] Therefore fluoridation of drinking water combined with other dietary sources of fluoride may contribute to a total maternal fluoride intake that could cause neurological damage to unborn babies.

Fluoride has also been identified by the U.S National Research Council as a toxin "that can cause and pro mote cancers" and negatively impact on endocrine systems.[161] Masters and Copland also demonstrated that silicofluorides in drinking water can contribute to a wide range of neurological diseases contributing to learning behavioral problems, violent crime and substance addiction,[162,163] Given the scientific information provided in this communication, the Government oflreland and the Department of Health have no alternative but to comply with the 'precautionary principle' and end the policy of mandatory fluoridation of the population oflreland immediately.

Failure to act presents a substantial and unjustifiable risk to the population of Ireland and in light iof the findings presented here would demonstrate criminaJ neligenceof the imthorities concerned.

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An abridged version of an open letter and further correspondence to Dr Harry Comber, Director, National Cancer Registry Ireland.

Cc: Enda Kenny, An Taoiseach,
Dr James Reilly, Minister for Health,
Simon Coveney, Minister For Agriculture, Food and Fisheries,
Phil Hogan, Minister for Environment, Community and Local Government,
Dr Tony Holohan, Chief Medical Officer, HSE,
Dr Ivan Perry, Professor of Public Health Department of Epidemiology & Public Health, University College Cork, and
Laura Burke, Director General, Environmental Protection Agency.

Water-Fluoridation Cancer link

Dear Sirs and Madam

I am writing regarding the information provided in the National Cancer Registry Ireland (NCRI) cancer statistic maps reported in, "Water fluoridation-cancer link is 'improbable'"(fMT, November 2), in particular the comments by the NCRI and Northern Ireland Cancer Registry (NICR) as quoted "that the maps did not show a clear difference between Northern Ireland and Ireland."

This is quite remarkable as you are contradicting the stated fmdings as noted in Cancer Atlas report which clearly state the following regarding the results of the mapping exercise: *"The risk of developing many of the cancers presented was higher in Raf than in NI The risk of non-melanoma skin cancer, melanoma, leukaemia, bladder, pancreas and brain/central nervous system cancers was significantly higher for both sexes in Rol For men, the risk of prostate cancer was higher in Raf and,for women, cancer of the oesophagus and cervix.* " Furthermore the report concluded that *"There was a marked geographical variation in the risk of some common cancers..- the most consistent geographical distribution of cancer risk was seen for three cancers (pancreas, brain/central nervous system and leukaemia) which showed an increasing gradient of risk from northeast to south-west.* "

The All Ireland Cancer Atlas report, that is to say your report, documents that the risk for bla:ddeicancetwas up to 14% higher iii tlie ROI; letikaemiaupto 23%, Pancreatic cancer up to 22%, skin cancer up to 18%, prostate cancer 29%, oesophageal cancer up to 8%, brain cancer up to 20% and cancer of the cervix and uterotis up to 11% higher compared to Northern Ireland. Coincidentally this also follows the variation in Osteosarcoma, an often fatal childhood cancer for which the incidence is also known to higher in the ROI compared to Northern Ireland. The peer reviewed journal *Cancer Causes and Control* published a study by Harvard University in 2006 in which it was clearly found that fluoride in drinking water significantly increased the risk of developing this disease in teenage boys. More recently in 2012 the Russian Academy of Sciences have documented that toxic fluoride effects include an induction of inflammatory reactions, cell contractile responses, inhibition of protein synthesis and

cell cycle progression, oxidative stress, and DNA damage. The Academy reported that fluoride has been found to alter critical physiological and pathological processes for the body's defence and repair mechanisms reducing the body's antioxidative defence mechanism and impairing the ability of the body to eliminating free radicals and fight disease. All of which is clearly relevant to cancer disease.

Contrary to your claims that most of the geographic areas on the maps are not fluoridated there are 270 water fluoridation plants located across the Republic, ensuring that the vast majority of population are exposed to fluoride compounds in drinking water. Furthermore as I have previously highlighted to your offices and other State Departments, when it comes to fluoride the single biggest factor that influences its toxicity is water chemistry or water hardness to be precise, followed by the chemical nature of the fluoride compound, i.e. naturally occurring calcium fluoride or synthetic liquid based silicofluorides, which are known to be far more toxic. Regarding water chemistry it has been known for decades that the softer the water the greater the toxicity of fluoride on biological systems. Some of the cancer maps illustrate this quite alarmingly with the geographic regions with the softest water having the highest risk factor for many of the cancer diseases. Interestingly the maps also illustrate that for some of the few none fluoridated communities in the Republic, the risk factor of developing disease is similar to that of Northern Ireland which overall is identified as predominantly the lowest risk area for developing cancer diseases throughout the 32 counties of Ireland, and is also the only geographic region where water is not fluoridated.

From the position of identifying potential risk factors that may contribute to this notable phenomenon, it is noteworthy in its absence that the influence of exposure of a population to a highly toxic chemical (hexafluorosilicic acid) and its various derivative compounds through drinking water was not included as a factor that may contribute to disease burdens. This is particularly remarkable as the only known difference in population exposures to known enviromnental toxins between NI and Ireland is that the NI drinking water supply is not fluoridated.

It is also well documented that water chemistry plays an enormous role in disease prevalence, it has been documented by the World Health Organization how populations exposed to low calcium and magnesium drinking waters have an increase risk of developing cancer as well as other diseases such as cardiovascular and neurological illness. It is also known that fluoride strongly inhibits calcium and magnesium metabolism in biological systems, consequently it is of great concern that populations living in geographic areas with soft waters are further exposed to ···· Tfimec:essafy lfealth tisks when their water supplies ate·fluoridated: Iris also known that the softer the water the greater the bioavailabiity of fluoride compounds in humans and animals. The British Medical Research Council expressed concern regarding this fact when they stated that: *"lf the bioavailability of ingested fluoride can vary significantly, this might need to be taken into account in the interpretation of epidemiological studies.*" Yet as noted in the Waugh report on water fluoridation, this has never been examined in Ireland. In fact not one epidemiological study to investigate the potential human health impacts that may be associated with fluoride toxicity has ever been conducted in Ireland since fluoridation began in the 1960's. Returning to the topic of cancer incidence and fluoride, as I have highlighted to your offices in 2006 the scientific committee of the National Research Council (NRC) of

the National Academy of Sciences in the U.S unanimously concluded that "fluoride appears to have the potential to initiate and promote cancers". It is extremely worrying therefore to note that while the NRC listed over 50 additional epidemiology, toxicology, clinical medicine and environmental exposure assessments required to be undertaken on fluoride, not one of these studies has ever been undertaken in Ireland the only EU country to support mandatory fluoridation.

It is also noteworthy to note that three U.S. courts have found water fluoridation to be injurious to human health, specifically that it may cause or contribute to the cause of cancer and genetic damage, while the US National Toxicology Program in 1990 found 'equivocal evidence' in animal experiments that fluoride was carcinogenic.

In addition, epidemiological studies both undertaken and resurfaced by Dr Dean Burk, former head of the Cytochemistry Section at the US National Cancer Institute determined that fluoridation increased the incidence of cancer deaths immediately in as little as a year.

Given the lack of appropriate human health risk assessments and the complete lack of toxicological information on silicofluoride chemicals used for water fluoridation and considering the remarkable increase in disease burden amongst the population of Ireland in recent years it is not inconceivable that fluoride may play a significant role in the development of many diseases.

In such circumstances it is clearly incumbent on the Government to uphold its moral and legal obligation, to comply with the 'precautionary principle' and to call for an immediate cessation of this policy in line with other EU Member States thereby · providing the entire population of the island oflreland with non-fluoridated drinking water, a basic legal right provided to the remaining 98 per cent of the population of Europe.

**References available on request*

Declan Waugh
EnviroManagement Services
Risk Management, Environmental Auditor and Environmental Consultant
Bandon
Co Cork
Ireland

Wasser-Information 34 E
Edition 8/92

DVGW
Information

DVGW Statement on the Fluoridation of Drinking Water

Recent events have caused the DVGW to review its 1974 statement on the fluoridation of drinking water and to publish an updated version.

Fluoridated drinking water has been available since the end of the sixties to consumers in several cities in the former GDR, including Chemnitz, Magdeburg and Erfurt. The legal basis for this was the Second Implementing Regulation of the "Ordinance Regulating the Hygienic Monitoring of Central Water Supply Systems - Hygienic Monitoring of Drinking Water Fluoridation" (Law Gazette of the GDR, Part II, 1970, 659). Due to the transitional regulations of Dec. 18, 1990 implementing EC law (Federal Law Gazette I, 1990, 2915-2926) drinking water continued to be supplied under the old law in the territory of the former GDR until Dec. 31, 1992.

The addition of fluoride to drinking water in the old federal Lander is addressed in Section 37 para 2 no. 5 of the Act on the general reform of food legislation (Act on food and materials coming into contact with food - Lebensmittel- und Bedarfsgegenstandegesetz, LMBG) of 1974 (Federal Law Gazette, Part I, 1974, 1945-1966). According to this law, the "addition of fluorides to drinking .water to prevent caries" may be permitted upon request in individual cases as an exception to the legal provisions if the facts justify the assumption that there are no health risks. The Land governments are authorized to regulate the conditions and the procedure for such exceptions more precisely in statutory rules and orders. The governments of the Lander include appropriate authorities responsible for the approval of such exceptions.

Since the effective date of the LMBG on Jan. 1, 1975, no Land government has laid down such statutory rules and orders.

After the water supply companies in the new federal Uinder ceased the practice of adding fluorides to drinking water, relevant professional bodies have expressed the fear that this could result in an increase in the incidence of **caries.**

Therefore the DVGW feels bound to publish a new statement, even though there is no new basic evidence since the mid-seventies that would induce the DVGW to revise its position as stated at that time. Two comprehensive studies of the literature illustrate this. These studies assess scientific publications on the subject of drinking water fluoridation over the last fifteen years.

These studies of the literature will be included in the DVGW series of publications on water for the information of water supply companies and specialists in the population.

The position of the DVGW concerning drinking water ifuoiicfation is as follows:

1. Drinking water is a food. It is the duty of water companies to supply drinking water that meets all requirements of a food. This means that drinking water must be of such a quality that there are no known adverse health effects resulting from its consumption **or use.**

DVGW
Deutscher Verein des Gas- und Wasserfaches e.V.
Technisch-wissenschaftliche Vereinigung

HauptstraBe 71-79
Postfach 52 40
D-6236 Eschborn 1
Telefon (06196) 7017-0
Telefax (06196) 481152
Telex 4072874

Compliance with DIN 2000 and the Drinking Water Ordinance guarantee this.

It is not the task of water supply companies to add substances to drinking water intended as prophylactics against illness not caused by drinking water.

The OVGW therefore is against the addition of fluorides to drinking water.

2. Caries is not the manifestation of a fluoride deficiency, but is the result of a generally false nutrition and inefficient dental hygiene. Unwholesome habits resulting in caries are not eliminated by the fluoridation of drinking water; on the contrary, they are promoted.

3. The suggested optimal fluoride concentration of 1 mg per litre is very close to the dose with which long term detrimental effects in people cannot be excluded. The limit of fluoride as specified in the Drinking Water Ordinance is 1,5 mg per litre.

   The very small difference between the concentration regarded as beneficial as a prophylactic and the limit value in drinking water cannot be justified in view of different habits and therefore differing consumption of drinking water and the uncontrolled intake of fluorides from other sources. The safety of a lifelong accumulation of fluoride in the human body as a result of increased intake is disputed in medical science throughout the world.

4. Less than 1 per cent of the fluoride contained in drinking water would act as a prophylactic. More than 99 per cent would be discharged with waste water directly into the environment. This additional fluoride emission into waters is unacceptable for ecological reasons.

5. The consumer cannot avoid fluoridated drinking water made available by public water supply. This mandatory intake of fluoride violates the basic right to bodily freedom from injury and free development of personality provided by the Basic Law of the Federal Republic of Germany.

6. Fluoride intake for the prevention of caries is more effective with specific measures taken by the individual than by fluoridation of drinking water.

7. An assessment of risks vs. benefits involving both the health aspects and ecological consequences justifies DVGW's rejection of the fluoridation of drinking water.