

Chapter 7

Water fluoridation (WF) and fluorinated salt

The practice and extent of WF worldwide

Fluoride has been added to water supplies ostensibly to reduce the incidence of dental caries/cavities, but the claim that swallowing fluoride lowers the incidence of tooth decay is still unproven, because after 70 years, there has still been no randomised controlled trial (RCT) demonstrating its effectiveness.

The type of fluoride put into water supplies by water companies is either sodium fluoride (NaF) or hydrofluorosilicic acid (H₂SiF₆) which mostly comes from the waste material of aluminium manufacturing, brick-making or phosphate fertilizer production.

Hydrofluorosilicic Acid

Hydrofluorosilicic acid, sometimes called hexafluorosilicic acid or chemical fluoride waste, is the preferred choice for water companies to use for water fluoridation as it is cheaper than sodium fluoride. It is a clear to straw-yellow, fuming liquid (emits a vapour) compound normally sold as a 25% w/w aqueous solution with a fluorine content of 19% by weight. (1)

The chemical fluoride waste used for fluoridating water supplies at the present time, comes from the manufacturing of phosphate fertilizer and is collected in the following way.

At the end of the fertilizer manufacturing process, toxic smoke, containing three toxic gases - hydrogen fluoride (HF), silicon fluoride, and silicon tetrafluoride (SiF₄) pass through chimneys. To avoid this smoke going into the surrounding air, water is sprayed inside the chimneys and the toxic gases are captured, dissolving into the water as fluorosilicate and fluorosilicic acid. This toxic liquid, is now called hydrofluorosilicic acid and also contains, at least, 30 other contaminants such as mercury, arsenic, lead and cadmium. It is so toxic that it will corrode and eat into metals, concrete, and even glass, so must be kept in storage tanks and transported in tankers lined with an acid-resistant protective lining. When water companies are requested to fluoridate a water supply most will add phosphate to try to counteract the effects of corrosion on pipes and equipment.

The manufacturer's safety data on 'hydrofluorosilicic acid' describes it as 'hazardous waste', which is illegal to put into the seas, water ways or onto the land. Ironically, in the USA, once this hydrofluorosilicic acid is purchased by another company, it becomes a 'product' and no longer has to meet the stringent EPA legal requirements for handling hazardous waste. This ruling or 'loop hole' was welcomed by manufacturers, especially fluoridating water companies as they now had a cheap, 'chemical fluoride mix' to use, which was much cheaper than sodium fluoride. Hydrofluorosilicic acid is now sold to many companies and used in many other ways apart from WF; in animal hide tanning, glass etching, wood preservation and along with oxalic acid becomes a rust removing product. It is also of value for its hydrofluoric acid content. (2)

In the past, this toxic acid smoke vented freely into the atmosphere, as it was, and is difficult and expensive to neutralize the acid by passing it through lime. It caused severe environmental damage, including widespread cattle poisoning, scorched vegetation and various human health complaints. Litigation by farmers forced manufacturers to find a way of preventing this smoke entering the atmosphere. This resulted in capturing the toxic fumes/gases in water, as described above, before they could pass out through the chimneys and into the atmosphere. (3)

Due to its toxicity 'hydrofluorosilicic acid' has never been tested for safety. See Appendix 9. The USA's Environmental Protection Agency (EPA) has said that, hydrofluorosilicic acid, is unsafe at less than 1 teaspoon in an Olympic sized swimming pool.

It is of interest to note that in 1951, in the USA, the waste, hydrofluorosilicic acid, produced from the manufacturing of aluminium, sold at the rate of 50 cents per ton. When it was sold to the water companies to use for water fluoridation the manufacturers' made a profit of ten million dollars during the first year alone. By 1987, in the USA, chemical fluoride was being sold for \$256 per ton and there was a net profit of a \$1,000,000,000 (a billion dollars). The aluminium company now uses their fluoride waste to make synthetic cryolite and it is the phosphate fertilizer industry that supplies the hydrofluorosilicic acid to the water companies. (4)

Sodium fluoride

Sodium fluoride, in contrast to hydrofluorosilicic acid, is a dry, white coloured free flowing powder with minimum purity of 98% and a fluorine content of 45% by weight. (5)

Sodium fluoride can be produced in two ways:

1) by adding soda ash (sodium carbonate) or caustic soda (sodium hydroxide) to the waste liquid, hydrofluorosilicic acid - the waste product from the manufacturing of aluminium or the phosphate fertilizer industry. The toxic substances within hydrofluorosilicic acid are heavier than water and bind with the soda ash or caustic soda. This is then dried into a powder to become sodium fluoride.

2) by adding sulphuric acid to fluorspar. The name fluorspar is used for fluorite when sold as a bulk material or in processed form. Fluorspar is sold in three different grades, acid, ceramic and metallurgical. By the reaction of sulphuric acid with the acid grade fluorspar, hydrofluoric acid is produced and then by the reaction of hydrofluoric acid with sodium carbonate or sodium hydroxide, sodium fluoride is produced. This is then centrifuged (centrifuge works by rotating at rapid speeds, thereby separating substances using the power of centripetal force) and dried. (6) This is the sodium fluoride usually used in toothpaste.

For the first 10 years, sodium fluoride was the preferred choice, for water companies to use for fluoridating water supplies. This is now only the case for 10% of areas in the USA. Engineers, when pouring sodium fluoride into pumping equipment, at Water Treatment Works (WTW), must wear protective hazmat suits because of the toxic nature of the powder.

Sodium fluoride is used for many things apart from WF. It has been used to kill rats; it is used as an insecticide; it is used in a variety of adhesives and glues; it is used as a wood preservative as its presence prevents the growth of bacteria, fungi and moulds; it is used as a rust remover and it is used for refining lead as it will corrode metals, even aluminium.

Sodium fluoride, along with potassium fluoride, hydrogen fluoride, and ammonium bifluoride, are the precursors in the making of fluoridated chemical weapons, Sarin, Soman, and Cyclosarin, which are 'weapons of mass destruction' according to UN Resolution 687. In 2013 the UK approved exports of sodium fluoride and potassium fluoride to Syria at the very time Syria was at war with many of its own citizens. It appears that the exports were finally stopped, but not until it was revealed that, 4.2 tons of sodium fluoride had been exported to Syria from the UK from 2004 – 2010. (7)

To see the toxicity of sodium fluoride either go to the safety data produced by the manufacturers, or go to Appendix 11, of this book.

Chemistry books tell us that sodium fluoride (NaF) is readily dissolved in water (H₂O), releasing the fluorine ion from the sodium. The fluorine ion vigorously reacts with the water and combines with the hydrogen to form hydrogen fluoride (HF) and oxygen. HF becomes hydrofluoric acid when in contact with more water. Both HF and hydrofluoric acid are extremely active and dangerous poisons.

In the 1950s, the USA fluoridated at 1.0 -1.5 ppm fluoride and at that level, it was estimated that 10% of American children would be diagnosed with dental fluorosis. However, that estimate was incorrect as 65% of American children now have dental fluorosis, (NHANES 2011-2012 data). As a result of this, in 2015, the USA's Department of Health, the Centre of Disease Control (CDC) recommended that concentrations for fluoride in drinking water be reduced from 1mg/L fluoride to 0.7mg/L fluoride in order to reduce the incidence of dental fluorosis in children. But importantly, and unfortunately, the US Environmental Protection Agency has continued to allow fluoride concentrations of up to 4mg/L in drinking water. (8)

The USA, in the past, bought the fluoridation chemical from the phosphate fertilizer industry in central Florida (9). In recent times, since 1986, it has been purchased from China, a non-fluoridating country. China did begin water fluoridation in 1964, in Guangzhou, but after observing a 6.5 increase in dental fluorosis along with other adverse health findings, the practice finally came to an end in 1983. (10)

The UK's fluoridation level is 1.0 ppm with the upper regulatory limit being 1.5 ppm (the maximum allowed). Joy Warren has discovered that Water Companies which fluoridate their treated water in the UK are advised to add up to 6.3mg of hydrofluorosilicic acid or hexafluorosilicic acid to each litre of water in order to bring the concentration of fluoride up to 1mg fluoride per litre. This is because this toxic waste, hydrofluorosilicic acid, only has a fluorine concentration of about 19% by weight. At 1 ppm fluoride (F) every litre drunk contains 1mg (one thousandth of a gram) of F. (11)

A few sources of water have more than 1.5 mg of naturally occurring fluoride, and it is then necessary to blend this water with water containing little or no fluoride in order to reduce the fluoride concentration to below 1.5 mg." (12)

A law was passed when Mrs Thatcher was Prime Minister that water could be passed from one area that was fluoridated to another area which was un-fluoridated without the normal requirement to notify residents that their water was now fluoridated.

The UK imports the fluoridation chemical. At one time it came from Finland (YARA), then from Spain (Derivados del Fluor, Onton, Basque Country) and at the present time it comes from Israel. These countries remain non-fluoridated. The tender to supply is renewed every 5 years and the cost of the acid increases every year. (13)

Countries that fluoridate

Today, however, most developed nations do not fluoridate their water. In western Europe, for example, only 3% of the population consumes fluoridated water.

At present, 97% of the western European population drinks non-fluoridated water. This includes: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Italy, Luxembourg, Netherlands, Northern Ireland, Norway, Portugal, Scotland, Sweden, Switzerland, and approximately 90% of both the United Kingdom and Spain. Other countries that don't fluoridate are: Croatia, Estonia, Hungary, Iceland, and Latvia. Although some of these countries fluoridate their salt, the majority do not. (The only western European countries that allow salt fluoridation are Austria, France, Germany, Spain, and Switzerland).

- Out of 196 countries, only 25 have water fluoridation programmes, 11 of these countries have less than 20% of their population consuming fluoridated water: Argentina (19%), Guatemala (13%), Panama (15%), Papua New Guinea (6%), Peru (2%), Serbia (3%), Spain (11%), South Korea (6%), the United Kingdom (11%), and Vietnam (4%).
- Only 11 countries in the world have more than 50% of their population drinking fluoridated water: Australia (80-90%), Brunei (95%); Chile (70%), Guyana (62%), Hong Kong (100%), the Irish Republic (73%), Israel (70%), Malaysia (75%), New Zealand (was 47% now 62%), Singapore (100%), and the United States (was 64% now over 70%).
- China began water fluoridation in 1964 in Guangzhou, but after observing a 6.5 increase in dental fluorosis along with other adverse health findings, the practice came to an end in 1983. It took a further three years to cease, in Dongguan where it was initiated in 1974. China already had a big problem with high calcium fluoride levels in water supplies - see Chapter 8 and because of this every province of China is afflicted with endemic fluorosis, except for Shanghai.

(Source Fluoride Vol. 35 no1 104 2002 Editorial review).

- In total, 377,655,000 million people worldwide drink artificially fluoridated water. This represents 5% of the world's population.
- There are more people drinking fluoridated water in the United States than the rest of the world combined.

(14)

Many studies around the world have found little or no difference in decay rates between fluoridated and non-fluoridated communities. A full list of these studies, can be found at the FAN's website. (15)

Two large studies stand out from these studies;

1. The study, 1986-1987, by researchers Brunelle and Carlos for the National Institute of Dental Research (NIDR), published in 1990, has been the largest US survey of its kind. The initial finding was that there was slightly less dental decay in fluoridated areas compared to un-fluoridated areas, but this was, at best, only a half (0.6) of a tooth surface out of 128 teeth, all of which have four or five tooth surfaces each (well over 512 surfaces).

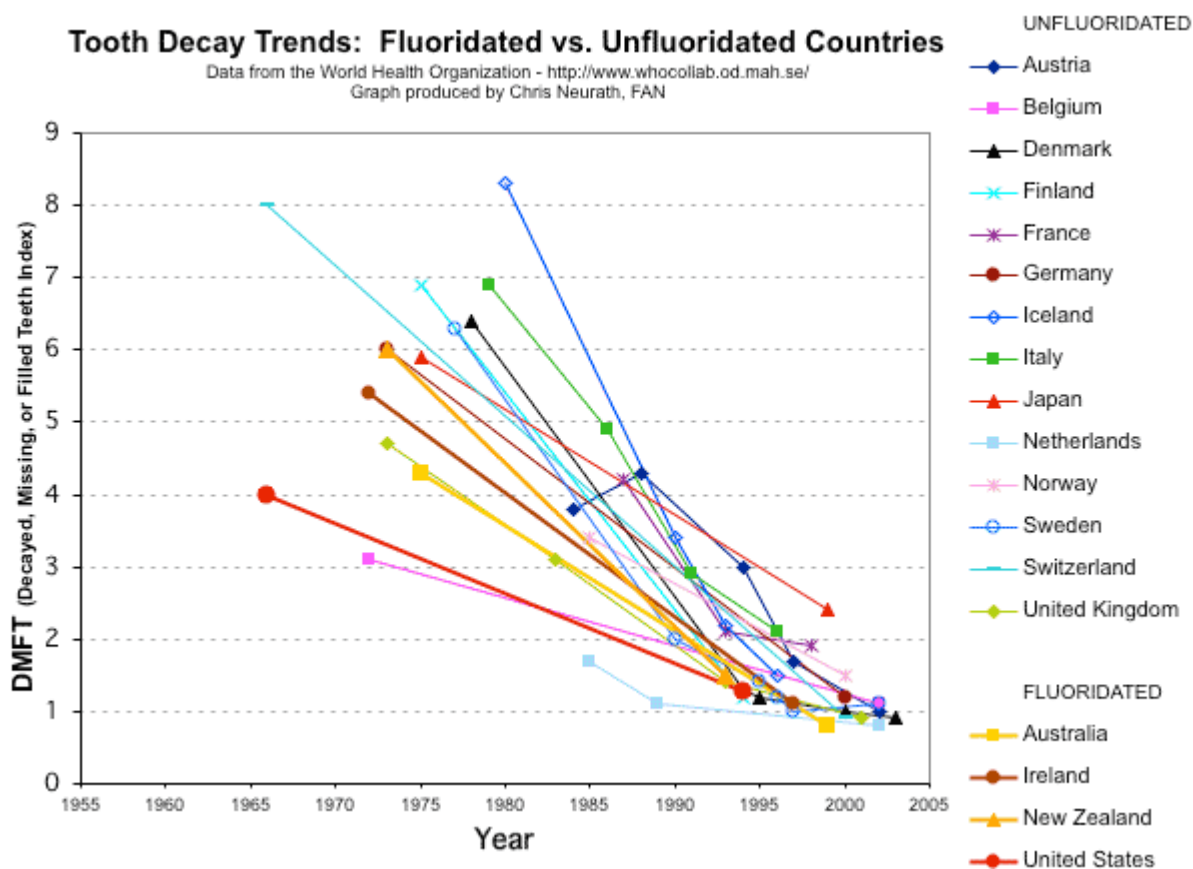
Dr John Yiamouyiannis looked at the very same data and found slightly less decay in un-fluoridated areas. (16)

2. The Iowa Fluoride Study, researchers Warren et al, published in 2009. The researchers monitored the fluoride intake of over 600 Iowan children from birth to adolescents. They found that children with no cavities had ingested almost identical amounts of fluoride at each year of life as children with cavities.

According to the authors:

"These findings suggest that achieving a caries-free status may have relatively little to do with fluoride intake, while fluorosis is clearly dependent on fluoride intake."

The graph below produced by Chris Neurath from World Health Organisation (WHO) data between 1970 and 2000, shows that tooth decay has been declining everywhere, whether in fluoridated or un-fluoridated countries.



(Source: www.fluoridealert.org)

Fluoride levels within the population of the USA and UK

In the US, approximately 75% of the population receives water which has fluoride added and this began in the early 1950s. Before 2015 the approximate level of added fluoride was 1.0-1.5 ppm, after that date it was reduced to 0.7 ppm as mentioned above.

In 1971, the National Academy of Sciences estimated that an adult's daily average fluoride intake was about 1.0 – 1.5 mg/day in the 1950s, in a fluoridated area and this amount was recommended at that time as it was considered that four cups of water would give a person 1 mg F a day – half of which would be excreted. Then there was no fluoridated toothpaste or vitamins and minerals with added fluoride. But even so this did not reflect true intakes for some subsets of the population, for example, athletes, diabetics, pregnant women, construction workers and heavy tea drinkers who can consume considerably more water than four cups of water a day and so could swallow up to 14 mg F/day.

By 1974, the average intake of F was estimated to be about 1.7 to 3.44 mg/day and three years later, the dangers of such a high level of intake were revealed by the National Academy of Sciences:

“Recent studies indicate that the total intake of fluoride is as high as 3 mg/day rather than the earlier figure of 1.5 mg/day, primarily because of increases in the estimated levels of fluoride in food. Balance data presented by Spencer also suggest a higher retention by bone, nearly 2 mg/day, rather than the 0.2 mg/day indicated earlier... These findings are important... a retention of 2 mg/day would mean that an average individual would experience skeletal fluorosis after 40 years.”

However, Raj Roholm, in the 1930s, had calculated that Stage 1 skeletal fluorosis resulting in aches and pains in the joints, resembling arthritis symptoms, would happen after 10 years of drinking water at fluoride levels of 1-2 ppm.

Despite such warnings, in 1986, the USA's Environmental Agency set a maximum contaminant level (MCL) for fluoride at 4 mg per litre of tap water. The recommended doses for kids were revised downwards in 1995, to 2 mg, and less for infants, to prevent fluorosis.

By 1991, the average fluoride intake in fluoridated American cities had more than doubled to over 6.5 mg daily because of the 'halo' effect from F being in the water supply. It was estimated in 2001, that the average person consumed between 5 -7 mg F per day in fluoridated areas, from drinking water, beverages, dental products, processed food, fresh food and vegetables, pharmaceuticals, Teflon coated cookware, vitamins and mineral supplements, tea... the list is endless. But a heavy coffee and tap water drinker, drinking four litres a day, would be at risk of crippling bone fluorosis after 10 years, according to National Academy of Science figures... or 20 years, says the US Public Health Service.

Children can consume enough fluoride to develop fluorosis if their tap water is fluoridated and they drink reconstituted juices. Grape juice, for example, has been tested at almost 6.8mg of fluoride per litre. It is no longer feasible to estimate with reasonable accuracy the level of fluoride exposure simply on the basis of concentration in drinking water supply.

According to the World Health Organisation, in combination with certain other factors (e.g. sub-optimal nutrition, kidney disease, etc.), a chronic fluoride intake of between 2.0 and 8.0mg/day can produce the pre-clinical stage of skeletal fluorosis, a debilitating and/or crippling bone disease. The pre-clinical and early stages of skeletal fluorosis can be mistaken for arthritis. (17)

The amount of fluoride ingested in the USA could now be about 8mg of fluoride a day which is eight times the amount originally estimated to be safe by those promoting water fluoridation. (18)

Now, because of a new fluoridation technology, called 'a fluoride tablet feeder system', developed by KC Industries in Florida, the USA is expected to fluoridate even more of the country including those small communities which had not been able to receive fluoridation in the past. The American Dental Association (ADA) wants funding for this new tablet system put into the USA infrastructure bill (2021) and has also asked the House Transportation and Infrastructure Committee for funding. The ADA President Daniel J. Klemmedson and Executive Director Kathleen T. O'Loughlin said,

"We respectfully urge you to include a one-time supplement infusion of funds to help states and localities revitalize their water fluoridation systems. Doing so will reduce the need for costly dental care, particularly in areas where the cost of community water fluoridation has traditionally been prohibitive".

The new fluoride tablet feeder system can fluoridate up to one million gallons per day and will be produced and sold by DuBois Chemicals"

Neither company responded to a reporter's query asking for the complete chemical composition of the tablets. The tablet system has received NSF Standard 61 approval, which means that no toxic chemicals are introduced into the product during its manufacture. It does not mean the product is effective, nor does it mean that the product does not generate any hazard once it is introduced into the water supply. (19)

In the UK, only 10% of the population in England receives fluoridated water and this began in 1964 – see Appendix 15 for a map. The UK Department of Health, as of 2001, estimated that the average daily consumption in fluoridated areas in Britain is 2.9mg/day. But this estimate was merely a guess, and not even an educated guess at that, because the Department of Health has never actually measured fluoride intakes. Even in 2018, the dental department of the PHE still had not managed to access the uptake of fluoride in individuals, as it stated in the 'Water Fluoridation – Health Monitoring', report of 2018, which updated the 2014, report, that it was

"'limited' in its ability to find meaningful data and could find no time or resources to assess individual 'total daily fluoride' intake."

However, Dr Peter Mansfield set up his own laboratory in 1990 to analyse urine samples for fluoride levels and, by 1997 and 1998, reported that the average daily consumption was more than 4mg – around 50% higher than government estimates – and in some cases was as high as 17mg. This is nearly six times the government's estimate. (20)

Since water fluoridation began, many doctors and dentists have reported ill effects that were resolved after fluoride was removed either from the water or from toothpaste. Dr John Yiamouyiannis in his book, 'Fluoride the Aging Factor' names several of these doctors and quotes their experiences;

Dr William P. Murphy, who won the Nobel Prize for his research which led to the cure of pernicious anaemia, is among those who have observed the adverse effects of fluoride. He recounts a patient of his who, *"while living in a community in which the water was fluoridated, had rather continuous swelling of the lower legs and face, aggravated by certain foods or medications to which she was allergic. After moving from this community to a non-fluoridated one this swelling largely disappeared and only re-appeared after exposure to fairly large amounts of allergens. After moving, she started using a fluoride toothpaste at which time she developed a rash on her cheeks and mouth with swelling on her face. After stopping this toothpaste this condition cleared up completely."*

Dr C.D. Marsh of Memphis, Tennessee, tells of a 62-year-old patient he examined.

“The woman lived in Memphis, which was not fluoridated at that time. Whenever she travelled to Washington D.C. and Richmond, Virginia – both fluoridated cities – she invariably developed excruciating abdominal pain, headache, backache, and profuse nasal discharge, followed by diarrhoea and lethargy. These symptoms disappeared promptly within a few days after her return home. She avoided these problems on future trips to the two cities by taking several bottles of Memphis water with her and avoiding fluid foods. Then twice she came down with the illness, to her surprise, while at home. Dr Marsh traced one of these reoccurrences to a fluorine-containing tranquillizer (trifluoperazine) prescribed by him and, the other occasion, to a fluoridated toothpaste. A double-blind test carried out by Dr Marsh confirmed fluoride as the cause of the illness.”

Dr Jonathan Forman, an allergist from Columbus, Ohio relates:

He pointed out that, *“when these people were put on distilled water and when fluorine-containing foods were removed from their diet, they recovered. When fluorine was introduced back into their diets, their symptoms returned.”*

Dr Luis Juncos and Dr James Donadio of the Mayo Clinic described;

“a 17-year-old girl and an 18-year-old boy who had skeletal and dental fluorosis, accompanied by markedly reduced kidney function. The youths’ primary source of drinking water contained 1.2 and 2.6 ppm fluoride, respectively. In regard to these two cases, Dr Juncos and Dr Donadio concluded that either fluoride was damaging the kidney or that fluoride was not being removed from the body because of an already damaged kidney.”

The possibility that fluoride damaged the kidneys in these cases is supported by evidence from the Yerkes Primate Research Center in Atlanta and Cornell University which show that 1 to 5 parts per million fluoride causes interference with enzymes in the kidney and kidney damage in laboratory animals.

Dr George Waldbott of Warren, Michigan observed fluoride-induced diseases in over 400 cases of fluoride exposure. (21)

In Holland Dr G.W. Grimbergen and a group of Dutch physicians studied 60 patients suffering from diseases induced by fluoride in drinking water - 50% suffered gastrointestinal disorders, 25% suffered from inflammatory diseases involving the mouth, 8% experienced excessive thirst, 5% experienced joint pains and/or migraine headaches and/or visual disturbances, and 3% experienced a ringing in the ears and/or mental depression. (22)

Tony Lees, dentist for 40 years from Herefordshire, said:

“People believe – wrongly – that the entire membership of the British Dental Association is in favour of fluoridation. There are a great many of us who are against putting this stuff into the drinking water. Fluoridation is out-dated 1960s technology, which doesn’t address the cause of tooth decay. Dentists are still dealing with tooth decay in fluoridated and non-fluoridated areas.” (Belfast 1998).

Lees also said,

“I’ve been looking at fluoride for years now and I believe it is systemic, affecting the bones as it does the teeth. Fluoride is the most reactive element imaginable. It is taken up by the enamel cells of the teeth as they are forming and it replaces calcium.” (23)

Donald McAuley, a Dublin dentist in the Republic of Ireland, said that at dental school students were told only one side of the story and said,

“Water fluoridation is sold as the greatest preventative oral health measure ever devised but the story is biased and the indoctrination manipulative.” (24)

John D MacArthur – ‘Pregnancy and Fluoride Do Not Mix’, published 2018.

“It is high time we change our long habit of not thinking fluoride consumption wrong and realise that this toxic chemical is a significant risk factor for premature birth and long-term neurological disabilities.”

Dr Avid Carlsson professor of pharmacology at Gothenburg University and Nobel Prize winner in Medicine/Physiology and who was instrumental in stopping water fluoridation in Sweden said, in an interview with Professor Connett on 4th October 2005.

“If you drink fluoridated water you are running the risk of all kinds of toxic action. ... It’s against all modern principles of pharmacology.”

Countries with fluoridated salt

In 1955, Switzerland became the first country in the world to fluoridate salt. Originally fluoridated at 90 ppm this amount changed in 1970, when all salt destined for human consumption was fluoridated at 250 ppm. By 1991, 75% of the domestic salt in Switzerland contained 250 ppm and was used by 85% of the population.

The other western European countries that allow salt fluoridation are Austria, France, Germany, Spain, Hungary and the Czech Republic. Consumers have a choice whether to buy fluoridated salt or fluoride-free salt.

In the period 1986 -1992, Jamaica, Costa Rica, Mexico and Uruguay introduced nationwide salt fluoridation. As Jamaica has only one producer of salt, no-one there has a choice.

“The French government state that the safe level of fluoride for consumption is half the level that the UK and USA says is the safe limit - 1 part per million. This is actually stated clearly on salt packets in France which contain fluoride, ‘Do not consume it in drinks with concentrations of fluoride above half of 1 ppm’. Both the French and English cannot be right with such stated differing levels of safety”. (25)

When in France in the mid - 2000s, the author found, seven different makes of salt on a supermarket shelf, and out of these seven, only one packet had added fluoride and iodine. So there was a choice to be had for the French people.

A study published in 2021, found that nearly 97% of children, in a region of northern Colombia, that was part of a health programme of cooking salt fluoridation, showed some sign of dental fluorosis.

The prevalence of childhood dental fluorosis had been 85% in 2015 and increased to 97% when a second evaluation took place in 2018, according to the study.

The scientists also quantified fluoride found in the children’s toenails, and noted that:

“Nearly a third of the children and adolescents exceeded the adopted threshold of 2 micrograms per gram.”

The authors consider the region endemic for fluorosis, but have found no environmental exposures that are so high in fluoride that would account for the nearly universal dental fluorosis. In a list of fluoride concentrations that they measured, the highest level was food seasoning at 6.7 ppm. (26)

The drinking water in the region, El Cedro, Colombia, has only 0.1mg per litre or part per million (ppm) fluoride but the salt has 180-220 ppm fluoride, according to a report from several Colombian and Brazilian universities, published 8th March 2021, in the ‘Scientific World Journal’. (27)

The World Health Organisation (WHO) recommends that all sources of fluoride exposure should be assessed for a population before adding artificial fluoride to a water supply.

(If this were duly undertaken, then this would surely end any more water fluoridation schemes and even fluoridated toothpaste.) Author’s comment in parentheses.

Chapter 7 References

- (1) (Ref: ‘The effects of fluoridating agents on the chemistry of Thunder Drinking water’, by J Vukmanich, Chief Chemist, Environmental Division, City of Thunder Bay, July 2009).
- (2) (Source: The Case Against Fluoride, by Paul Connett and co, page 17.)
- (3) (Ref: www.fluoridealert.org).
- (4) (Source, page 157 of Moolenburg’s book, Fluoride the Freedom Fight.)
- (5) (Ref: ‘The effects of fluoridating agents on the chemistry of Thunder Drinking water’, by J Vukmanich, Chief Chemist, Environmental Division, City of Thunder Bay, July 2009).
- (6) (Mueller 1994).
- (7) (Source; www.fluoridealert.org).
- (8) (Ref: <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>).
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- (10) (Source Fluoride Vol. 35 no1 104 2002 Editorial review).
- (11) (Ref: BSEN 12175:2013, page.19).
- (12) (Ref: EU Directive 98/83/EC).
- (13) (Source: Joy Warren at wmaf.com).
- (14) (Ref: www.fluoridealert.org).

- (15) (Source: www.fluoridealert.org, 'Tooth decay rates in fluoridated vs non-fluoridated communities).
- (16) (Ref: 'The Fluoride Aging Factor' by John Yiamouyiannis; www.fluoridealert.org).
- (17) (Ref: Barry Groves book 'Fluoride – Drinking Ourselves to Death' Page 55 & P 140).
- (18) (Source; Professor Paul Connett at FAN).
- (19) (Source FAN, at www.fluoridealert.org).
- (20) (Ref: Barry Groves' book, Page 46).
- (21) (Ref: John Yiamouyiannis' book, 'Fluoride the Aging Factor').
- (22) (Source: 'Fluoride The Freedom Fight' by Dr Hans Moolenburg).
- (23) (Ref: 'The Case Against Fluoride' by Anna Selby, The Times Magazine May 2002).
- (24) (Ref: 'Drinking Ourselves to Death' By Barry Groves, 2001).
- (25) (Source Edward Priestly, October, 7th 2006).
- (26) (Ref: Saldarriaga, A., Restrepo, M., Rojas-Gualdrón, D.F., Carvalho, T. dS., Buzalaf, M.A.R., Santos-Pino, L. and Jeremias, F. 2021. 'Dental fluorosis according to birth cohort and fluoride markers in an endemic region of Colombia'. The Scientific World Journal 6662940.)
- (27) (Ref: 'The Fluoridation Record', May 2021. Mike Dolan editor.)