

Chapter 9

Body organs and systems damaged by fluoride

Fluoride enters the body through the mouth, skin and lungs to cause havoc within the body.

Fifty per cent of the daily amount taken in by the body is excreted through the urine as calcium fluoride, while the rest remains and slowly accumulates to disrupt normal development. Some people may not notice any adverse health effects until months or years later.

Dr Russell L Blaylock, is an author and a retired U.S. neurosurgeon who worked at the University of Mississippi Medical Center. He said,

“We know that the presence of dental fluorosis, indicates that there is toxicity to other parts of the body including the brain; it, (dental fluorosis), provides a measure of fluoride accumulation within the bones, thyroid, and other organs.” (1)

Dr Charles E Perkins chemist, fluoride expert and author writes,

“The dissociated fluorine ion in the artificially fluoridated water inhibits phosphate metabolism and disturbs the calcium-phosphorus balance in the body, whereas the calcium fluoride in naturally fluoridated water does not do this to the same extent.” (2)

Dr Grimbergen, biologist, in Holland, made mixed cultures of moulds and bacteria and found that while, with normal water the bacteria destroyed the moulds, with fluoridated water, the beneficial bacteria were killed, so that the moulds got the upper hand and caused respiratory problems. (3)

The Mouth

The mouth has its own microbiome with good and bad bacteria. The good bacteria is necessary for food assimilation while the bad bacteria causes acidic conditions linked to dental decay. Fluoride can disable and/or kill all bacteria in the mouth. Fluoride can pass directly into the body and blood supply through the gums, from under the tongue and through the mucus membranes of the cheeks.

As previously quoted in chapter 6, Dr T. E. Douglas had patients with mouth ulcers due to fluoride-containing toothpaste. The patients' ages ranged from two and a half to 92 years. They included a family of six and another of four, every member of which was adversely affected by fluoride toothpaste. Several of these patients had gastrointestinal disturbances. The ulcers in the mouth did not respond to antibiotics or to local medication, but cleared up promptly when a non-fluoride toothpaste was used. In 32 patients, Douglas reproduced the stomatitis, by reapplying the fluoridated toothpaste – in some cases as often as six times. Stomatitis refers to inflammation of the oral mucosa which presents with ulcers that can cause pain and difficulty drinking and eating. Ulcer(s) can be present on the inner lips and cheeks, on the gums, or on the tongue and are caused by infection, irritants, trauma, or allergic reactions. (4)

Ulcers in the mouth which do not respond to antibiotics or to local medication, can clear up promptly when a non-fluoride toothpaste is used (author's experience).

In Holland Dr G.W. Grimbergen, biologist, and a group of Dutch physicians studied 60 patients suffering from diseases induced by fluoride in drinking water. 25% suffered from inflammatory diseases involving the mouth. (5)

Skin

It has been medically documented in double blind studies, that fluoride can cause eczema in children and adults. Double-blind studies are when both the participants and experimenters are blinded to the experimental process. (6)

Dr George Waldbott reported that urticaria and dermatitis was often due to fluoride and the causal relationship of these diseases to fluoride was established by 'double-blind tests'.

Dr Hans Moolenburgh was able to confirm these results and Mesliss Gallico wrote a book on 'Acne', 2016, identifying fluoride as the cause.

Below are two case studies, out of seven, presented in an article written by three doctors, J.J. Shea, S.M. Gilliespie and G.L.Waldbott.

1) Dr S. M. Gillespie relates the following,

"A seven-month-old female child, had been taking Tri-Vi-Flo [vitamin drops with fluoride] daily for a week. About that time, she developed an exudative, pruritic dermatitis [itchy red skin eruptions] on the neck, face and in the antecubital and retropopliteal areas [arms and legs] accompanied by diarrhoea, abdominal cramps and bloody stools. The parents noted that the cramps occurred exclusively after the afternoon feedings when the baby received fluoride drops. The drug was therefore discontinued. The skin immediately began to clear up. Within one week the eruption had healed, no medication had been prescribed. The child has been in good health ever since."

2) Dr C. D. Marsh of Memphis, Tennessee, reported the following,

"Mr E.H., aged 48, (went to his doctor) because of giant urticaria [itchy red skin eruptions] of one month's duration. The lesions involved mainly hands and feet and, at times, the entire body surface. At the first visit the lips and gums showed a marked oedema [swelling]. The lesions usually occurred about one hour after breakfast. At that time, he was using fluoride toothpaste. He was asked to discontinue the fluoride toothpaste and not to take any medication. Three days later he reported having had only a single hive and slight residual pruritus [itching]. Six days later, he was completely free of symptoms. Three years later, this patient experienced another episode of generalised urticaria. In the morning he had inadvertently brushed his teeth with a toothpaste used by his family without realising that it was a fluoride brand. The hives appeared within one hour of its use." (7)

Dr Yiamouyiannis noted that fluoride disrupts the structural protein in skin resulting in wrinkling. (8)

"Dermatitis and hives are not uncommon following intake of, or bathing in, fluoridated water". (9)

In fluoridated areas, fluoride is absorbed through the skin after sitting in a hot bath for 20 minutes. (10)

Psoriasis of the scalp has been found to disappear if non-fluoridated water is used when washing hair. (11)

Lungs

It has long been known that fluoride air pollution causes respiratory problems and shortness of breath.

Dr John Yiamouyiannis in his, 1993 book edition, page 12, cites the following:-

"In a survey of 370 aluminium workers in western Norway, increased prevalence of respiratory symptoms, work related asthmatic symptoms, and abnormal lung function were found in subjects exposed to higher fluoride levels in the air compared to workers exposed to lower levels in the air". (12)

Ingested fluoride has been found to accumulate in the lungs from 0.27 ppm to 2.1 ppm after water fluoridation. (13)

Dr Moolenburgh saw increased asthmatic like symptoms in his patients after fluoride was added to water supplies in Holland. (14)

Ingested fluoride can cause respiratory problems, and such problems increase within a population after fluoride is added to a water supply. After ten years of living in a fluoridated area many adults will become asthmatic. (Author's experience).

Dr Asselberg worked in the laboratory of the local hospital in Tiel, Holland, in 1965, for two years and, while there, she noticed that there was a lot of bronchitis in Tiel, and instead of the normal microorganisms she found moulds in the sputum of her patients. When, some years later, Dr Asselberg discovered that Tiel was fluoridated, she came to the conclusion that the fluoride in the water had killed all the good bacteria in people's mouths which would have eliminated these moulds. It was the increased mould proliferation which was the cause of the increase in bronchitis which Dr Asselberg had witnessed, in Tiel.

Some years later, the biologist, Dr Grimbergen, a colleague of Moolenburgh, made mixed cultures of moulds and bacteria and found that while with normal water the bacteria destroyed the moulds, with fluoridated water, the beneficial bacteria were killed, so that the moulds got the upper hand. This confirmed Dr Asselberg's conclusion. (15)

Beagle dogs were forced to breathe calcium fluoride dust in an experiment in the 1950s at the Kettering research laboratory, USA. Scientists found that the dogs' lungs were thickened with inflamed lesions on the surface, which they called, 'emphysema'. The fluoride ion had wreaked havoc with biological tissue because, inside the lung, the calcium fluoride dust had been transformed into a corrosive acid penetrating deep within the body. It also showed that fluoride travelled quickly from the lungs into the blood stream. An experiment planned for humans was discontinued because of these unexpected findings. (16)

Stomach (also see the importance of the stomach to the immune system.)

As with the mouth, the healthy microbiome of the stomach is damaged due to fluoride ingestion. Sodium fluoride has been shown to reduce the adhesive attachment of necessary bacteria in the gut leading to gastrointestinal problems and immune problems.

Professor Susheela noted,

"fluoride diminishes the beneficial microbial growth in the gut.....resulting in poor absorption of nutrients critical for the biosynthesis of haemoglobin (blood). The beneficial microorganisms also play a part in vitamin synthesis and in absorption of calcium, magnesium, and iron and help maintain a healthy intestinal tract, and prevent harmful bacteria from congregating." (17)

Susheela documented and photographed, clearly, in her 2007 book, 'A Treatise on Fluorosis', Chapter 7,

"the damage done to the microvilli of the stomach when small amounts of fluoride are ingested. The main complaints are nausea, loss of appetite, pain in the stomach, gas formation and bloated feeling, constipation followed by intermittent diarrhoea and headache."

With the microvilli damaged, nutrients from food cannot be successfully absorbed. Susheela's diagnosis was confirmed,

"through endoscopy and scanning electron microscopy of biopsy material obtained from gastric and duodenal regions revealing a "cracked clay" appearance of the mucosa, loss of microvilli from the mucosal surface and disappearance of mucus". (18)

Prof Susheela, during her lecture tour of the UK, in August 2008, said that the interaction of fluoride with the gastric acids, particularly hydrochloric acid, in the stomach, forms the highly corrosive hydrofluoric acid (HF) and was a likely mechanism for the change to the gut.

Susheela also stated in her book, that

"symptoms could clear up within three weeks if all sources of fluoride were eliminated, and a diet with adequate calcium, iron, vitamin C, E and other antioxidants, if consumed simultaneously, leads to a remarkable recovery within a short space of time".

Since then, the damaging effect to the stomach by fluoride has been documented by C.J. Spak et al. In 1989, these researchers gave a dose of 20 mg/F to 12 healthy volunteers and then examined, both microscopically and macroscopically, the impact on the gastric mucosa. The examination revealed that the fluoride dose caused erosions (petechiae) in the stomach of the subjects tested, with six of the subjects having similar effects in the antrum (the lowermost part of the stomach) as well. Other findings were as follows:

"In four subjects a layer of clotted blood was found over a large part of the gastric mucosa... Three components of the gastric mucosa were affected by fluoride: the surface epithelium, the gastric pits, and the superficial stroma. The damaged epithelial cells were smaller than undamaged ones, and the vacuoles containing mucus were reduced in size or had disappeared. The most severely damaged epithelium was disrupted or totally lost. The most characteristic changes in the gastric pits were irregular dilation and flattening of the epithelial cells. There was also a noticeable loss of mucin." (19)

Despite the fact that tissue damage was found in all 12 volunteers, only 4 of the volunteers experienced nausea. Thus,

"using nausea as the first sign of fluoride toxicity might not be valid as all subjects showed mucosal damage."

In a follow-up study, published in 1990, the same researchers examined the impact of lower doses of fluoride, to determine whether the use of self-applied topical gels could cause damage to children's gastric system. In the study, the volunteers ingested a dose of just 3 to 9 mg of fluoride, which is considerably lower than what some people ingest from higher-concentration professional fluoride gels. Despite using low doses, the authors again found significant damage to the gastric mucosa. They described this damage as follows:

"After F exposure, histopathological changes were found in nine out of ten patients. The surface epithelium of the gastric mucosa showed the greatest effects: In two cases, there was a slight dilation of the gastric pits and a focal loss of surface epithelium. In some cases, the mucus-containing intercellular vacuoles were reduced in size, and focal haemorrhages within the epithelium occurred." (20)

This damage to the stomach lining has been found to happen when fluoridated toothpaste (or gels) are swallowed, confirmed researchers, J.D. Shulman et al, in 1997. (21)

In 1999, the Environmental Protection Agency (EPA) in the USA, stated that,

"Ingested fluoride is transformed in the stomach to hydrofluoric acid, which has a corrosive effect on the epithelial lining of the gastrointestinal tract. Thirst, abdominal pain, vomiting, and diarrhoea are usual symptoms. Haemorrhage in the gastric mucosa, ulceration, and oedema are common signs." (22)

Babies in fluoridated areas, therefore, can have colic, distressing colic, if they are bottled fed with formula milk made up with tap water. Breast fed babies, given fluoridated water from a spoon from time to time, can also experience the same condition.

Vitamin and mineral absorption, within the stomach and intestines, is impaired by the presence of fluoride, because of damage to the villi and because of fluoride's binding potential.

Vitamin B

Dr Leo Spira's book, 'The Drama of Fluorine', published 1953, states (Page 91):

"Fluoride interferes with the mechanism through which vitamin B exerts its influence on the body."

Magnesium

Dr Carolyn Dean MD ND in her book, 'The Magnesium Miracle' tells us that,

"fluoride binds readily with magnesium and makes it unavailable to the body. The fluoride and fluorine in water, or from dental procedures, in toothpaste and in drugs, binds with magnesium, forming the magnesium fluoride compound called sellaite (MgF₂).....and that this is almost insoluble and ends up taking the place of magnesium in tissues such as bones and cartilage; its brittleness makes the bone susceptible to fracture. The magnesium-fluorine bond is so tight that magnesium is irrevocably lost to the body, interfering with its hundreds of biochemical interactions, and decreasing enzymatic action." (23)

Magnesium is responsible for the optimal functioning of as many as 800 enzyme systems in the body, any or all of which could be impaired. Dr Dean informs us that 80% of the population is deficient in magnesium, so most people are susceptible to the toxic effects of fluoride.

Collagen, Ligaments and Tendons

Dr Yiamouyiannis, in his book, 'The Aging Factor' informs us that collagen makes up 30% of all proteins in the body. (24)

"This most abundant of all proteins in the body, collagen, serves as a major structural component of skin, ligaments, tendons, muscles, cartilage, bones and teeth. Fluoride disruption of the structural protein in skin results in wrinkling... weakening of ligaments, tendons, and muscles... arthritis and stiffness results. This at levels as low as 1 ppm F in the drinking water." (25)

Dr Yiamouyiannis goes on to explain that:

"Damage to the collagen production in bone can interfere with the normal process of bone rejuvenation and repair through life. Others have found that, at fluoride levels as little as 0.7 ppm, imperfect collagen or collagen-like proteins results in mineralization of tissues which should not be mineralized and vice versa." (26)

Pankaj K. Godhaviya's book, 'Studies of Fluorine', Page 81-82 reports the fact that fluoride has such a great affinity for calcium and binding with it, that calcium cannot properly be utilised by the body. This leads to

disruption, with tissues such as tendons and ligaments which should be flexible and soft, being calcified and so becoming hard.

When calcium is deposited inappropriately, as crystalline calcium phosphate (another name being calcium hydroxyapatite crystals) in tendons, or anywhere in the body, pain can result. Such a painful condition in the shoulder is called Calcified Tendinitis.

As fluoride damages collagen anywhere in the body, it is one of the reasons that it is a major cause of heart attacks, back pain, weak knees and more. Because of this, on 8th July, 2008, the US's Food and Drug Agency (FDA) announced that an insert warning of increased risk of developing tendonitis and tendon rupture be included in antibiotics made with fluoride because some people's Achilles tendons rupture after only one dose. The following antibiotics, called fluoroquinolones are:

- Ciprofloxacin (marketed as Cipro and generic Ciprofloxacin)
- Ciprofloxacin extended release (Marketed as Cipro XR and Proquin XR)
- Gemifloxacin (marketed as Factive)
- Levofloxacin (marketed as Levaquin)
- Moxifloxacin (marketed as Noroxin)
- Ofloxacin (marketed as Floxin and generic ofloxacin)

The Heart

The heart requires a lot of calcium to do its work and, when fluoride holds on to and disrupts the calcium balance within the body, the heart can become stressed. Heart disease also increases as fluoride's inappropriate action attracts and concentrates calcium into the arteries, contributing to their hardening. (27)

Dr Waldbott was hesitant to record this effect saying that,

"Fluoride may even contribute to calcification of arteries". (28)

However, in Waldbott's book, 'Health Effects' Page 155, he reports confidently, that,

"When calcification takes place in soft tissues, (because of fluoride's disruption of calcium), the fluoride levels are highest in the aorta (the heart), and other blood vessels".

As an example, he cites an individual less than 20 years-old living in New York City where the fluoride in the water was low, 0.1 ppm, and this individual had as much as 2,340 ppm fluoride, in his aorta.

(As the fluoride excess on this young boy's heart, seems not to be the result of drinking fluoridated water, unless he had lived elsewhere, was it caused by the individual using fluoridated dental products such as toothpaste, gel, mouthwash etc.) Author's comment in parentheses.

The United States Dispensatory, 24th Edition (1950), on Pages 1456-57, states the following:

"Whenever calcium and fluoride ions meet, they will unite to form a nearly non-reactive molecule of calcium fluoride or the less reactive molecule calcium fluorophosphate. When this reaction takes place in the wall of the coronary artery or other small arterial walls, we can expect a mechanical obstruction to the flow of blood, the extent of which depends on the amount of calcium and fluoride present. The result can be coronary thrombosis or hardening of the arteries"...and continues,

"...the fluoride ion is a very active inhibitor of many essential enzymes, disturbing the normal process of calcium, phosphorus and magnesium metabolism."

Carolyn Dean, MDND, in her book, states,

"Fluoride in water, pesticides and other environmental pollutants oxidize cholesterol in the body, and it is this oxidized cholesterol that researchers are concerned about when it comes to heart disease." (29)

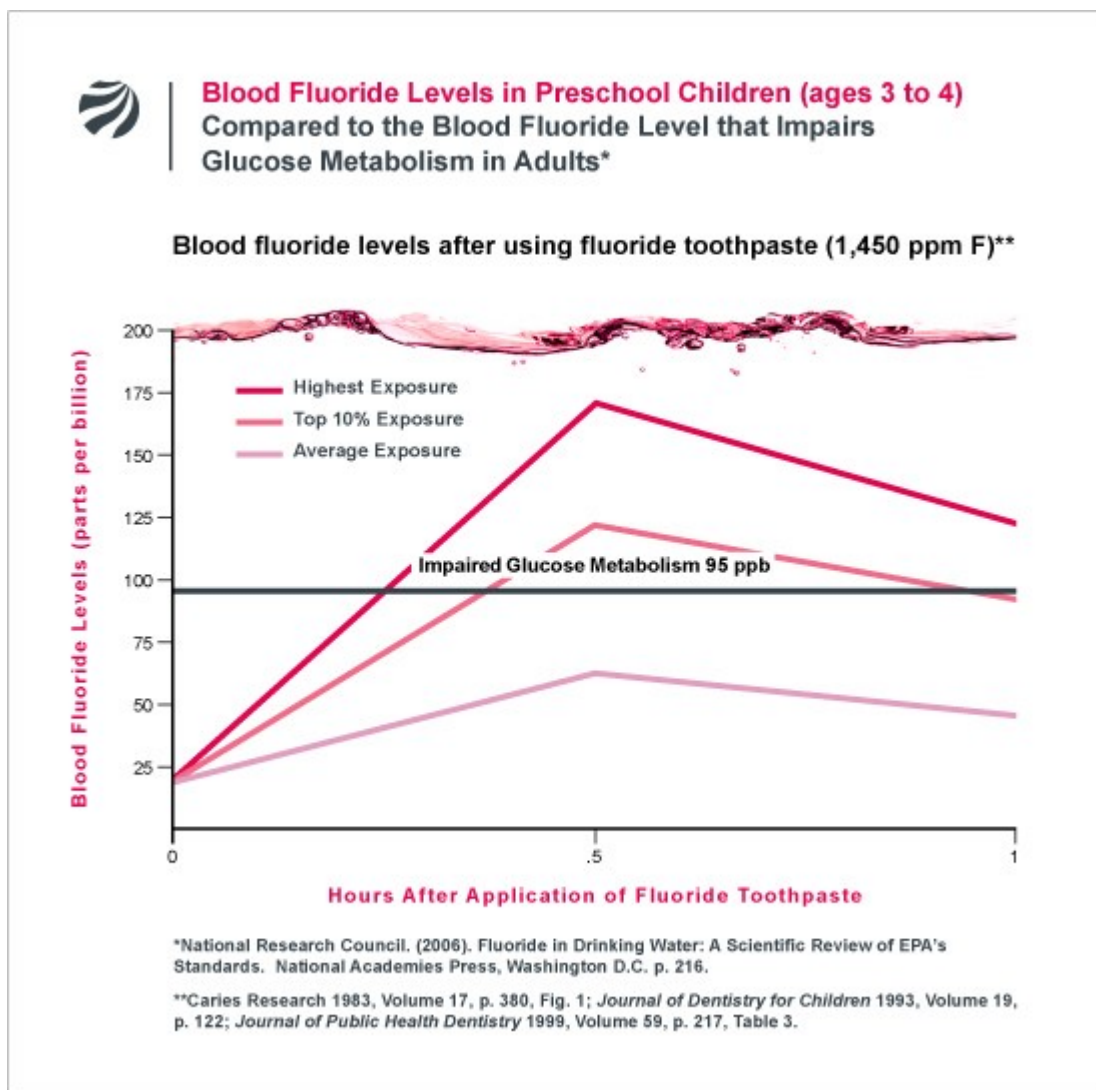
Pankaj Godhaviya in his book, 'Studies of Fluorine', states that,

"Ingested fluoride enters the stomach and, in that acidic environment, converts to hydrofluoric acid (HF)... Hydrofluoric acid (HF) penetrates tissues more quickly than typical acids... Once in the blood, hydrogen fluoride reacts with calcium and magnesium, resulting in electrolyte imbalance. This affects the heart."

Pancreas and Insulin Levels

Researchers in the 1980s from the University of Indiana reported that ingestion of fluoride toothpaste can have an impact on blood glucose and insulin levels. It is estimated that blood fluoride levels of just 95 parts per billion (ppb) produce an increase in glucose levels and a decrease in insulin. Strikingly, this is routinely exceeded by 5 - 10% of children using fluoridated toothpaste. Therefore, fluoride consumption from toothpaste and other sources could contribute to a rising incidence of Type 2 Diabetes (diabetes mellitus). (30)

“Children who swallow fluoride toothpaste can reach fluoride levels in their blood that exceed the levels that have been found to inhibit insulin secretion and increase blood glucose in animals and humans,” says Prof. Paul Connett and points to the following graph. (31)



In 2006, the National Research Council summarised the available literature as follows:

“The conclusion from the available studies is that sufficient fluoride exposure appears to bring about increases in blood glucose or impaired glucose tolerance in some individuals and to increase the severity of some types of diabetes. In general, impaired glucose metabolism appears to be associated with serum or plasma fluoride concentrations of about 0.1mg/L or greater, in both animals and humans.” (32)

“In addition, diabetic individuals will often have higher than normal water intake and, consequently, will have higher than normal fluoride intake for a given concentration of fluoride in drinking water. An estimated 16-20

million people in the United States have diabetes mellitus..... therefore, any role of fluoride exposure in the development of impaired glucose metabolism or diabetes is potentially significant.” (33)

Animals studies that have confirmed the above are; I. Menoyo et al, 2005, and A R Shahed et al,1986.

Thyroid

Problems related to low thyroid function include: depression, fatigue, weight gain, muscle and joint pains, increased cholesterol levels and heart disease.

A good working thyroid of pregnant mothers is necessary for the development of the brains of their unborn children. The iodine necessary for good thyroid function is displaced by low amounts of fluoride, causing it to malfunction. However, there is evidence to suggest that, if there is abundant iodine in the blood, this can help protect the thyroid from malfunctioning. (34)

Literature dealing with fluoride and the thyroid gland dates back to, 1854 with a study by Maumene, who found that fluoride caused goitre (a swelling of the neck resulting from enlargement of the thyroid gland), in dogs.

Confirmation, in recent times, on the damaging effect of fluoride on the thyroid is given in an observational study by Professor Stephen Peckham, in 2015. The study showed that incidences of hypothyroidism (an underactive thyroid), as reported by doctors in their GP's practices, were nearly twice as likely in the West Midlands, a wholly artificially fluoridated area around Birmingham, in comparison to Greater Manchester, a non- fluoridated area. (35)

People for Poisoned Children', on their website (<https://poisonfluoride.com/dir/>), have 250 scientific papers from the last 20 years on the effects of fluoride on the thyroid hormone metabolism, and 200 papers on fluoride and thyroid dysfunction from China.

The effect that fluoride had on the thyroid became well known in the 1900s, because fluoride was used to lower an over-active thyroid, a condition known as hyperthyroidism. In the 1930's, a product called 'fluorotyrosine' was manufactured by German pharmaceutical company Bayer. This poisoned the enzyme in the thyroid glands and slowed down the production of thyroid hormones. Unfortunately, some patients' thyroid glands were so poisoned by fluorotyrosine that their glands were destroyed. Many patients suffered complete loss of thyroid function with this treatment. Consequently, the use of this drug for the treatment of hyperthyroidism was discontinued and, instead, it was used as a pesticide and became a rat poison.

To see a list of fluoride experiments and observations dating back to 1917, go to Appendix 13.

The doses used to lower an over-active thyroid are easily reached in fluoridated communities today. (36)

The US National Research Council (NRC) stated in its report of 2006 that fluoride was an 'endocrine disrupter' and harmed the thyroid. The report also mentioned that,

“Fluoride exposure in humans is associated with elevated thyroid-stimulating hormone (TSH) concentrations, increased goitre, and altered T4 and T3 concentrations; similar effects on T4 and T3 are reported in experimental animals... In humans, effects on the thyroid function were associated with fluoride exposures of 0.05-0.13 mg/kg/day when iodine intake was adequate and 0.01-0.13 mg/kg/day when iodine was inadequate.” (37)

Prof Paul Connett responded to this statement, on Page 161 of his book, 'The Case Against Fluoride' stating,

“Such dosages are extremely low; a child would reach them by drinking one or two glasses of fluoridated water at 1 ppm,” or (a child under three years of age could reach that level of exposure after a day of tooth brushing with fluoridated toothpaste.) - Author's comment in parentheses

Sub-clinical hypothyroidism, often undetected by doctors, can cause untold emotional damage within families... the non-stop crying of babies, lack of energy of mothers etc.

Read Jen Black's story, Appendix 1 (e), to learn of the tragedy of this unseen disease. Jen lives in an area where the water supply is fluoridated, and this would have contributed to, what she intuitively suspected was an underlying thyroid problem.

To see Albert Burgstahler speaking in a three-minute video clip on thyroid dysfunction and fluoride go to <https://www.youtube.com/watch?v=XCx4SaqciAs>.

Kidney and Liver

Dr Waldbott states in his book on 'Health Effects of Environment Pollutants', Page 155, that:

"Experimental and clinical data point to fluoride's adverse effect on kidneys following long-term fluoride intake in minute doses. At the level of 0.4 ppm fluoride in water, renal (kidney) impairment has been shown." and

"this undeniable evidence, (damage to kidneys) was emphasized from an early date". (38)

The 2019 study published in August by Mount Sinai researchers, in Environment International, concluded,

"Fluoride exposure may contribute to complex changes in kidney and liver,"

The authors added that,

"Exposure to fluoride, replete in toothpastes and public water, may lead to a reduction in kidney and liver function among adolescents."

The study analysed fluoride measured in blood samples of 1,983 adolescents and the fluoride content of the tap water in the homes of 1,742 adolescents. Although the tap water fluoride concentrations were generally low, there are several mechanisms by which even low levels of fluoride exposure may contribute to kidney or liver dysfunction. This study's findings, combined with previous studies of childhood exposure to higher fluoride levels, show that there is a dose-dependent relationship between fluoride and indicators of kidney and liver function. The findings, if confirmed in other studies, suggest it may be important to consider children's kidney and liver function in drafting public health guidelines and recommendations. (39)

Another study in 2021, showed an increased risk of hyperuricemia (uric acid retention) with low to moderate levels of fluoride intake. (40)

Eyes

Dr George Waldbott reported that:

"The eyes may serve as a valuable guidepost in diagnosis (for fluoride poisoning), since they often reflect what occurs inside the body..... damage to the optic nerve and the retina are encountered in the early stage of fluoride poisoning before bone changes occur".

Retinitis is a disease that threatens vision by damaging the retina, which is the light sensing tissue at the back of the eye. Dr Waldbott noticed the early signs of this condition, blurred vision, inability to focus, and the presence of moving spots, frequently in the eyes of his fluorosis patients before bone changes occurred. He also reported on a more advanced case of retinitis following administration of 60 mgs daily in three doses (20mgs each) of sodium fluoride for six weeks to a patient in the treatment of osteoporosis. (41)

George Waldbott tells us that,

"In a survey of the high-fluoride Province of Punjab, India, the prevalence of cataracts was significantly higher than in low-fluorided regions of the upper and lower Himalayas, namely 7.2% vs 3.8% and 5, respectively. Furthermore, an above average rate of blindness caused by senile cataracts in naturally high-fluoride Green Bay, Wisconsin, US, together with the strikingly high incidence of cataracts among adults with Down's Syndrome (67 out of 95 in one of the Wisconsin institutions, who) were observed in work (situations, and this led to further studies) on the relationship of fluoride in drinking water and the appearance (of children born) with Down's Syndrome".

Even Dr T. Dean, who oversaw the first water fluoridation trial in the USA, stated in his 1944 report, to the Technical Advisory Committee for the Newburgh Fluoridation Study, that in the higher fluoride areas (8 ppm F),

"There were indications of increased incidence of cataract among those 50 years of age or older."

Repeating the work done in 1954, by Nordmana et al using calf eyes, the National Referral Centre of Fluoride Poisoning, in India, in 2014, used goat eye lenses and investigated the biochemical changes that could cause cataracts. They were able to confirmed, Nordmana's conclusion, that fluoride causes cataracts. (42)

The chemist and author, Charles Eliot Perkins, in the 1940s conducted a series of experiments to determine, what effect, if any, sodium fluoride added to the drinking water of normal strains of rats, had on the eye sight of the animals. He discovered signs of blindness, impaired vision and retina damage within 30 to 45 days of the experiments. (43)

The World Health Organisation knows that 50% of blindness is due to cataracts, and fluoride is the cause.

Reproductive organs

Dr Russell Blaylock in his book, 'Health and Nutritional Secrets', reports that males living in areas where there is a high fluoride level in the drinking water, had significantly lowered testosterone levels. High levels of fluoride have also been shown to reduce sperm mobility.

A study looking at 'the association of fluoride exposure with sex steroid hormones among US children and adolescents', found that plasma fluoride is related to lower testosterone and estradiol in male adolescents. (44)

For females, fluoride is known to lower the age at which girls start to menstruate. (45)

Dr Yiamouyiannis writes in his book (The Aging Factor),

"Laboratory studies by Dr Aly Mohamed have shown that 1 ppm fluoride leads to chromosomal (DNA) damage and depressed testosterone synthesis. Additional studies have shown that this leads to a depression of spermatozoid function in males and a loss of fertility in females. The genetic damage to these testes' cells can lead to birth defects and other metabolic disorders which can be passed on from generation to generation."

A study in 2020, showed that low to moderate fluoride intake had an adverse effect on reproductive endocrinology in US adolescents. (46)

In tests on both children and adults, the use of topical fluoride gels at the dental office has been found to produce blood fluoride concentrations as high as 1.2 ppm, or four times higher than the concentration found to damage sperm. (47)

A review of over 100 studies of sperm density from 1938 to 1996, found that human sperm count has significantly declined in North America and Europe since the 1940s. (48)

John MacArthur in his book 'Pregnancy and Fluoride Do Not Mix', published 2018, reported that there was an increase in pre-term births (early births) and pre-eclampsia in fluoridated areas. This he indicated was due to an extra number of women with hypothyroidism in these areas because of fluoridated water. Pre-eclampsia or toxemia, means that pregnant women have high blood pressure and albumin (a protein made by the liver), in their urine. This can happen as soon as 20 weeks into a pregnancy but more often happens in the concluding months.

On 23rd February, 2015, Professor Stephen Peckham et al, published a study in the UK which showed that there was indeed an increase in the number of people with hypothyroidism in fluoridated areas, compared to non-fluoridated areas.

Erectile dysfunction can be caused by a lack of Nitric Oxide (NO) and NO can be reduced by fluoride. Nitric Oxide (NO) is made by the body and is also produced at the back of the tongue by bacteria. This Nitric Oxide is very short lived, about 0.25 of a second, but is vitally important. We produce 25% of the body's need of it just by breathing. A lack of Nitric Oxide can lead to heart disease and erectile dysfunction. (49)

Dr Jerry Tennant, in his book 'Healing is Voltage', explains that,

"Nitric Oxide (NO) is required by the body for blood circulation. It is a gas that serves as a signalling molecule in every cell in the body:

- 1. It causes arteries and bronchioles to expand.*
- 2. It allows brain cells to communicate with each other.*
- 3. It causes immune cells to kill bacteria and cancer cells."*

(Nitric Oxide could be compromised when fluoride is introduced into the mouth by toothpaste or dental practices, because when fluoride is present, it converts Nitric Oxide into the toxic and destructive Nitric Acid). Author's comment in parentheses.

Animal studies -

"In 2002 and 2006, Polish researchers reported that low levels of fluoride can damage sperm in ways that could impair male fertility. (Zakrzewska 2002, 2006). In the studies, the researchers exposed ram semen to 380 ppb of fluoride (0.38 parts per million (20 umol/L). After just five hours of exposure, the researchers found significant decreases in sperm motility (the ability of the sperm to move) and the number of intact acrosomes (the part of the sperm that produces enzymes necessary for egg penetration). According to the authors, such changes 'undoubtedly affect the physiological function of the sperm.'" (50)

Prior to the Polish team's findings, researchers from Texas found that, *"infusing testis with higher, but still relatively modest, levels of fluoride (4.75 ppm) 'unequivocally' inhibited the synthesis of testosterone."* (51)

Other studies have demonstrated that low levels of fluoride can render mice infertile. (52)

When Dr Leo Spira conducted an experiment with rats drinking fluoridated water,

"the testicles of these rats degenerated to such a degree that they could be regarded as having, to all intents and purposes, disappeared altogether... and the thyroid gland, too, was damaged to such an extent that it was difficult to identify the organ under the microscope as the thyroid gland." (53)

A 2013 study, published in the journal 'Archives of Toxicology' showed a link between fluoride exposure and male infertility in mice. The study's findings suggest that,

"sodium fluoride impairs the ability of sperm cells in mice to normally fertilise the egg through a process known as chemotaxis".

There are many studies that confirm this result. (54)

Chromosomes, DNA and Genes

In every cell of the human body, in the centre, is a nucleus. In each cell nucleus there are 46 chromosomes. We get 23 chromosomes from our mum, and 23 from our dad, resulting in the 46 chromosomes altogether.

Chromosomes are made up of long coiled lengths of DNA and a gene is a section of the DNA which codes for a specific characteristic, e.g. eye colour, hair colour, blood type and susceptibility to disease. Genes are the basic physical and functional unit of heredity. There are 3 types of genes. Type 1 tends to be involved in immune response or sensory receptors while type 111 genes are involved in cell to cell signalling and type 11 genes are a complex mix of all three types.

The 46 chromosomes hold an estimated total of 20,000 to 25,000 genes in the body.

There are two kinds of cell division, mitosis and meiosis.

Mitosis results in two cells that are duplicates of the original cell. One cell with 46 chromosomes divides and becomes two cells with 46 chromosomes each. This kind of cell division occurs throughout the body, except in the reproductive organs. This is the way most of the cells that make up our body are made and replaced. Meiosis results in cells with half the number of chromosomes, 23, instead of the normal 46. This is the type of cell division that occurs in the reproductive organs, resulting in the eggs and sperm. At the beginning of pregnancy, when a sperm fertilizes an egg, the two sets of 23 chromosomes, one set of 23 from the egg and one set of 23 from the sperm, merge and recombine in a unique way to make another 46 chromosomes so enabling a foetus to develop and grow. If meiosis doesn't happen properly and there is an error in cell division, a baby may have an extra chromosome (trisomy), or have a missing chromosome (monosomy). (55)

This delicate action of meiosis and division can be affected by fluoride, causing damage to the foetus that will develop. George Waldbott states it in the following terms,

"As an agent capable of producing meiotic chromosome changes, fluoride...has the potential for transmitting malformations to offspring, including man". (56)

Russell Blaylock reports on the risk of genetic damage with low dose fluoride exposure. (57)

Ionel F. Rappaport has reported on the higher incidence of 'Down's Syndrome' in fluorinated areas when the overall burden of fluoride intake is high. His remarkable investigations have been recorded by Dr George Waldbott, in his book, 'Fluoridation the Great Dilemma.' (58)

Animal studies on DNA and Genes

There are many animal studies that have linked genetic damage to fluoride exposure. (59)

Three examples are: -

1) In 1974 and 1976, Dr Wolfgang Klein et al demonstrated that cells exposed to 1 ppm fluoride exhibited a 50% reduction in DNA, repair and enzyme activity.

2) Dr A. H. Mohamed and Dr M.E. Chandler of the University of Missouri at Kansas City demonstrated in 1976 that as little as 1 ppm of fluoride could result in chromosomal damage in cells from the testes and bone marrow.

3) Proctor and Gamble found that 1 ppm of fluoride or even 0.6 ppm of fluoride, could cause genetic damage in Chinese hamsters' ovary cells.

Of further interest is the fact that, cells from humans and apes have been found to be more susceptible to fluoride-induced genetic damage than rodent cells. (60)

Enzymes

Enzymes in the human body – and there are thousands of them in each cell – are responsible for triggering the chemical reaction that make life possible.

Fluoride has the ability to interfere with enzyme activity at 1 ppm fluoride or less. This is not a point of controversy. The US National Academy of Science and the World Health Organisation, as well as others, have published lists of enzymes which are inhibited at fluoride levels of 1 ppm.

One hundred enzymes are affected by fluoride binding to enzyme co-factors such as magnesium, manganese and phosphate, thereby preventing the appropriate co-enzyme from activating. (61)

Dr James Sumner, Director of Enzymes Chemistry in the Department of Biochemistry and Nutrition at Cornell University, who won the Nobel Prize for his work in enzyme chemistry, said in the 1950s;

"Fluorine and fluorides are very poisonous substances, and we use them in enzyme chemistry (in vitro - in test tubes) to poison enzyme, (and enzymes are) those vital agents in the body. That is the reason things are poisoned, because the enzymes are poisoned and that is why animals and plants die."

Dr Sumner also said that,

"Fluoride is a major disruptor of enzymes which are large proteins that assist with 10,000 biological reactions in the body." (62)

Paul Connett mentioned the following, in his book, 'The Case Against Fluoride', published 2010, on pages 117 -118;

"Fluoride can interfere with enzyme function in two ways: either by attaching itself to a metal ion located at an enzyme's active site or by forming a competing hydrogen bond at this same active site."

"Fluoride attacks the hydrogen bonds that give enzymes and other large proteins their shape. Once they lose their shape, these large molecules no longer work properly.... Hydrogen bonds are of critical importance to both the structure and function of some of the most important molecules of the body." (63)

Dr Dean A. Bonlie has said that:

"Both the dentine and enamel were formed inside the tooth.....through the intervention of the enzyme, adenosine diphosphatase."

And Gerald F. Judd in his book, 'Good Teeth Birth to Death', published in 1997, wrote that,

"The enzyme, adenosine diphosphate, initiates re-enamelising but this is destroyed by fluoride,and fluoride, from any type of exposure, destroys 66 of the 83 known enzymes."

Gerald Judd also wrote in his Affidavit of 1993, the following,

"Fluoride at low levels has been shown to unsnap hydrogen bonds in the enzyme cytochrome oxidase and, thus, ruin its ability to handle oxygen in humans, animals or plants."

Dr Yiamouyiannis writes:

“Probably the most disruptive effect of fluoride is its influence with the use of oxygen, and (this) has been shown to depress the synthesis of an energy-producing substance called ATP. Enzymes called cytochromes, cytochrome oxidases, and cytochrome peroxidases are responsible for the proper utilisation of oxygen to produce ATP”.

“As little as two-tenths ppm of fluoride is calculated to result in a 50% bonding of fluoride to the enzyme cytochrome peroxidase. In so binding to the enzyme, fluoride would be expected to interfere with the proper utilisation of oxygen.” (64)

To summarise - fluoride attacks enzymes and for every enzyme inhibited or destroyed, a major metabolic function is stopped. (65)

Immune System, Allergies and Cancer

The gastrointestinal tract (GI) has 70 to 80% of the body's immune cells and is the primary site of interaction between the immune system and microorganisms, both symbiotic (helpful and necessary) and pathogenic (disease causing). Proper microbial colonization and composition of the GI tract are essential for the maturation of the immune system. Different bacteria have clearly defined adherence sites and immunological effects. Sodium fluoride has been shown to reduce the adhesive attachment of necessary bacteria in the gut leading to gastrointestinal problems. (66)

Dr George Waldbott documented allergy type symptoms from fluoride exposure in his book, 'Fluoridation, The Great Dilemma', published 1978.

And thirty years later, on the, 7th February, 2010, the UK newspaper, The Observer, stated,

“The number of people at risk from severe and fatal allergic reactions has increased sharply every year for the past 15 years, according to NHS figures”.

Why was this, how had this happened, this steady increase in severe allergies?

After George Waldbott's book was published highlighting allergic reaction to fluoride in 1978, it was not until 1983, that Dr Yiamouyiannis published his informative book, 'Fluoride the Aging Factor', where he states the following;

“that low fluoride levels, i.e. below 1 ppm, may seriously depress the ability of the white blood cells to destroy pathogenic agents and noted that Dr Shelia Gibson showed that as little as 0.1 ppm of fluoride decreased the migration rate (activity) of human white blood cells.”

and

“With the immune system so weakened minor infections take longer to throw off and more serious illnesses result”. (67)

Further more,

“Fluoride confuses the immune system and causes it to attack the body's own tissues (causing allergic type symptoms)”.

Yiamouyiannis' final conclusion was that,
“there may be no safe level of fluoride”.

Dr Moolenburgh and his colleagues in Holland, were also absolutely convinced that fluoride lowers the resistance of people against sickness and that allergy type symptoms can be caused by a weakened immune system.

Moolenburgh details his findings of allergy-type symptoms caused by water fluoridation in his book, 'Fluoride the Freedom Fight', published in 1987, but it was not really allergy, he said, but slow poisoning. Dr Moolenburgh listed symptoms as:

- 1) *Small very painful sores in the mouth.*
- 2) *Laboured breathing in infants and children, thought to be asthmatic.*
- 3) *Itchy rash all over the body or weepy eczema.*
- 4) *Nagging pains in the stomach.*
- 5) *Colicky type pains in the stomach and some like acute appendicitis.*

6) *Infants and children yelling and screaming at night.*

And such symptoms could be reversed in weeks if the fluoride source was removed. Moolenburgh concluded that,

“fluoride at low levels, (from any source), constantly ingested, is a slow poisoning.”
Author’s addition in parentheses.

Dr Thomas Cowan reported in his recently published book, ‘Vaccines’, that, if the microvilli within the stomach are damaged, the body cannot digest starches, and this contributes to autoimmune diseases. And Dr Susheela has shown clearly, with photographic images, that low fluoride ingestion does damage the microvilli of the stomach.

It has been demonstrated that allergic people, living in non-fluoridated areas, can have their allergic symptoms ‘explode’ if they move into a fluoridated area. As an example, a wheelchair bound lady, with known allergies, was under a physician for psoriasis and her symptoms were under control. She lived in non-fluoridated London and on moving to fluoridated Bedford (at that time Bedford was fluoridated) her psoriasis became unmanageable. By chance she learnt that Bedford was fluoridated and on returning to her physician in London, mentioned this fact. Her doctor immediately told her to only use and drink un-fluoridated water, as the fluoride was the cause of her present, unmanageable condition. Difficult as it was to wash, cook and drink unfluoridated water she managed and her symptoms subsided. (68)

Dr Moolenburgh, in his book, suggests that, with low levels of chemical poisoning such as fluoride, compromising the immune system, there are three stages that the body goes through;

1. *the first stage is an awareness of acute symptoms.*
2. *the second stage is when the body tries to adapt, the immune system works harder to keep the body in equilibrium and the acute symptoms often disappear.*
3. *the third stage is when the body and the immune system become exhausted, giving rise to cancer.*

In the early 1970s, Dr Moolenburgh and his team discovered that fluoride, lowered the permeability of the cell membranes, making the cells more porous so that cancer causing pollutants (there are many) could enter more readily. The reason for the cell to change was because fluoride severely disrupting the enzyme, cholinesterase, which plays a role in nerve impulses and maintains the stability of cell membranes.

In addition fluoride promotes and enhances the effect of cancer-provoking pollutants. (69)

In the early 1960s, Dr Albert Schatz Ph.D. co-discoverer of streptomycin, studied the effects of water fluoridation in Chile and showed that fluoride increased death rates. In 1965, he sent a report of this study to the editor of the *Journal of the American Dental Association (JADA)* who returned it unread. He tried repeatedly to get his findings published in the JADA but was unsuccessful.

Dr Alfred Taylor and Dr Nell Taylor of the University of Texas found, in 1965, that fluoride in the drinking water at levels of one-half to 1 ppm increased tumour growth in cancer-prone mice by 15-25%. (70)

‘Better Health through Natural Healing’ ((Thorson 1985), article by Ross Trattler, quoted a UK ten-year research comparison of cancer rates in non-fluoridated Manchester with fluoridated Birmingham. In Birmingham cancer rates went up 850 per cent over ten years after the introduction of water fluoridation. In the same ten years, the cancer rates in Manchester, where there was no water fluoridation, went up by only 150 per cent: a 700 per cent difference. According to Ross Trattler, multiple studies link fluoridation with an increase in cancer, especially bone cancer.

Dr Dean Burk was a scientist and the chief chemist, at the National Cancer Institute in the USA for thirty-five years and had published more than 250 scientific articles and received many important awards for cancer research. Together with Dr John Yiamouyiannis, he had discovered a 10-15% increase in the cancer deaths in fluoridated cities. They had looked at 10 fluoridated cities as well as 10 cities that were not fluoridated, and found that, cancer rates went up substantially in the fluoridated cities after the water became fluoridated. Following this work, which was published in 1975, Burke said that,

“if all the USA were to be fluoridated it would mean 70,000 extra deaths yearly, or one fifth of all the cancer deaths, with twice as many deaths being from breast cancer in women and twice as many deaths from lung cancers in men. These deaths could have been prevented simply by NOT putting industrial fluoride waste into the public water supply”.

Burke also found that fluoride not only causes more cancer but causes it faster than any other chemical. He considered that fluoridation was 'public murder' on a grand scale and a public crime. He thought it highly unethical to force people to kill themselves.

Yiamouyiannis' later research showed that there may be even more deaths from various causes that could be attributed to fluoride - between 30,000 to 50,000 deaths each year. In 1990, fluoride was named as being an ambiguous health hazard by the National Cancer Cells Institute Toxicology Programme. (71)

Dr Burk's six-minute video clip may be seen at: <https://www.youtube.com/watch?v=ClqK7XvLg0>

Dr William Marcus, Senior Science Advisor at the Office of Drinking Water at the Environmental Protection Agency (EPA) in the US, concluded that the National Toxicology Programme's (NTP) study on rats, published in May 1990, proved that fluoride was a carcinogen. (72)

In 1992, a study by the New Jersey Department of Health confirmed a 6.9 fold increase in bone cancer, osteosarcoma, in young males living in fluoridated areas. (73)

Another study by Elise Bassin from Harvard University, in 2000, also showed that exposure to fluoride during mid-childhood growth spurts (ages 6-8) is an important risk factor in developing osteosarcoma in boys. Osteosarcoma is a type of bone cancer that usually develops in the osteoblast cells that form bone, and is the sixth most common cause of childhood cancer. When young boys drank water containing the recommended fluoride level, their risk jumped to more than seven times that of unexposed boys. This link, between fluoride exposure and osteosarcoma in boys was found in the USA and parts of the UK.

David Kennedy's six-min video clip on rat study and cancer can be found at this link:

https://www.youtube.com/watch?time_continue=42&v=TKgz0GKN7QA.

Pancreatic cancer is 34% higher in fluoridated communities in the USA – with only a 7% survival rate after five years. (74)

The increase in oral cancers, after the introduction of fluoridated water, was reported in the USA by the National Cancer Institute. Their study from data collected between 1973 and 1987, between fluoridated and un-fluoridated counties showed at least a 33% to 50% increase in the incidence of oral cancers in fluoridated areas.

In the UK, statistics published in 2016, showed that oral cancers have increased since the late 1970s (since the popular use of fluoridated toothpaste), increasing by more than four-fifths (83%). (75)

The British Dental Journal reported, on 27th November 2020, that:

"Mouth cancer cases in the UK have soared for the 11th year in a row, and have more than doubled within the last generation."

'The State of Mouth Cancer UK Report 2020/21', stated that:

"Mouth cancer has increased by 58% in the last decade and by 97% compared with 20 years' ago."

And Dr Nigel Carter OBE, Chief Executive of the Oral Health Foundation, added, in the same report that:

"Mouth cancer can now affect anybody." (76)

For more information on the continued rise of mouth cancer visit www.mouthcancer.org

It was reported in the Independent newspaper on 21st September 2022 that,

"Britain faces 'early-onset cancer epidemic' as cases increase rapidly.....and this could be just 'the tip of the iceberg'".

The article concluded that it was not fully clear what was driving this increase.

However, it is well known that radiation as well as toxic chemicals can cause cancer. Not so well known is the fact that fluoride increases and magnifies the effect of both radiation and toxic chemicals.

John MacArthur studied the death figures in 2013 between the most fluoridated states and least fluoridated states in the USA and found that there was a 2-13% higher death rate in fluoridated areas and for Alzheimer's disease the death rate tripled. He also found that the prescribing rate for opioid pain relievers averaged 9% higher in the 20 states most fluoridated. (77)

In the UK, at the end of the 1970s, the incidence of people being diagnosed with cancer during their lifetime was reported as being 1 person in every 5 people. By the late 1990s, this rate had increased to 1 person in every 2 people, which means that half of the population will be diagnosed with cancer, at some time in their lives.

Endocrine System

The Endocrine System is a system of glands which produce hormones. These hormones act as messengers that travel in the blood to act on and activate certain tissues. The system of glands producing these hormones are the:- hypothalamus, pituitary, pineal (these three in the brain), the thyroid, parathyroids (in the neck and upper chest), then there are the adrenals, pancreas, testes and ovaries. Together they regulate metabolism, growth and development, tissue function, sexual function, reproduction, sleep and mood, among other functions. The glands regulate how much of each hormone is released to stimulate specific cells or tissues into action. A healthy endocrine system is needed to assimilate nutrients from the gut. (78)

G proteins are important molecules that carry these messages, these hormones, between cells. However, fluoride interferes with these G proteins thereby disrupting the body's natural signalling pathways. (79)

Researchers in 2010, concluded that,

“Fluoride can interact with a wide range of cellular processes such as gene expression, cell cycle, proliferation and migration, respiration, metabolism, ion transportation, secretion, endocytosis, apoptosis/necrosis, and oxidative stress, and these mechanisms are involved in a wide range of signalling pathways”. (80)

Bones

Fluoride impacts millions of people living in India, China and Africa severely, as they can have water supplies that are high in natural fluoride

An early symptom from fluoride poisoning is a bone and joint disease, called skeletal fluorosis which mimics the symptoms of arthritis. These symptoms can be easily misdiagnosed, states Paul Connert in his submission to South Central Strategic Health Authority 2008. He also writes in his 2010 book, that there have been numerous animal studies showing that fluoride weakens bones, as well as teeth (81)

The bone is the principal site for fluoride to accumulate within the body, states Waldbott in the following:

“The action of fluoride on bones is similar to that on teeth. When incorporated into the apatite crystal, the main building block of bones, fluoride increases the crystallinity and size of the crystal and produces greater density of the skeleton.....the newly-formed bone is not healthy; in particular, it tends to fracture easily.....it can cause functional damage to joints (arthritis) and grotesque bony protrusions that encroach on nerves and induce a variety of symptoms from numbness and pain to actual paralysis.” (82)

As early as 1944, T. Dean stated in a report to the Technical Advisory Committee for the Newburgh Fluoridation Trials Study, that:

“A city with 8 ppm F (natural fluoride) – some bony changes were found [in people] although they did not result in functional impairment. These changes started in the lumbar region and the pelvis.”

He also noted changes in nails, stating that:

“Ten to 20% of the younger individuals... had a rather unusual type of nail structure, the most characteristic aspect being transverse white blotches often completely across the nail, usually symmetrical, and on all the nails, there very frequently being from three to five of these per nail.” He noted no such changes in people with 0.4 ppm F in the water supply. (83)

The onset of arthritic type symptoms is insidious, with stiffness of the back and legs, fleeting pains in the spine and knee-joints. For a full, long list of fluoride and bone studies see: 'The Case Against Fluoride', by Paul Connert.

Dr Peter Mansfield, in co-operation with the Coventry (UK) Osteoporosis Support group, discovered that those with osteoporosis consumed nearly twice as much fluoride – an average of 6.3mg/day, compared with 3.4mg/day for those who were symptom-free. He says:

“This substantiates our fear, that high daily fluoride intake based on artificially fluoridated water causes bone disease well before old age.”

He wrote articles to this effect in 1997 and 1998. (84)

There are increased hip fractures in fluoridated areas because of weakened bone and arthritic type symptoms. C. Danielson et al found, in 1992, that the risk of hip fracture was approximately 30% higher for women and 40% higher for men exposed to fluoridated drinking water at 1 ppm F, when compared to those with un-fluoridated water. The effect was particularly strong in those women who were exposed to fluoridated water during the time of menopause, a time of active bone remodelling. In older women, when bone remodelling is less and the incorporation of fluoride in bones is less, the effect was less strong. The confounding factors of smoking and alcohol use, which might dilute the fluoride significance of other studies, are not present in the population of this study; thus, the effect of fluoride is all the more clear to see, and further studies soon confirmed this. (85)

In 2021, a further study from Sweden by Helte et al, confirmed and demonstrated a higher risk of hip fractures, at least 50% higher, in post-menopausal women which was associated with long-term exposure to 'natural fluoride' at levels of up to 1mg/L of fluoride in water

This large, high-quality study involved a cohort of more than 4,000 older Swedish women and extended for 13/14 years, from 2004 to 2017. (86)

Another study in 2021, by Almakadma et al, was looking at bone density and found that a 70-year-old lady with generalized joint aches, stiffness as well as fatigue, was found to have high bone mineral density and alarmingly high fluoride levels. The patient was found to have been drinking fluoride-containing water from an untreated local well for many years.(87)

In 2021, the third 'Water fluoridation (WF) Health Monitoring Report for the UK' was produced by UK Health Security Agency (UKHSA) officials - the previous two reports were produced by Public Health England (PHE) officials. [In 2021, PHE's health protection functions were formally transferred into UK Health Security Agency (UKHSA), while its health improvement functions were transferred to the Office for Health Improvement and Disparities (OHID) at the Department of Health and Social Care (DH. SC)]

Anyway, this 3rd report on WF and health stated, as the previous two reports did, that there was no increase in hip fractures in fluoridated areas of the UK. However, Chris Neurath, Science Director for American Environmental Health and Penny Sowter, researcher in the UK, challenged this statement and found it to be incorrect with a 20% higher rate of hip fractures, in the elderly, in fluoridated areas. For more detail on their independent research, see 'Buried Information,' later in this book, Chapter 15.

Hip fractures are serious issues as it is well known that, in the elderly they are debilitating, costly to treat, and lead to a loss of independence, institutional care and often shortens the life of those impacted. These findings highlight the fact that fluoride can impact our health from the womb to the tomb, affecting the brains of the foetus and the bones of the elderly after lifetime exposure.

In October 2023, Chris Neurath, Research Director of Fluoride Action Network (FAN) reported on the following study -

"Community Water Fluoridation and Rate of Pediatric Fractures" (Lindsay et al 2023), stating:-

"Researchers, Lindsay et al, from Oregon Health & Science University found that US states with a high proportion of their population receiving fluoridated water averaged twice the rate of common types of childhood bone fracture as states with relatively little fluoridation. They also looked at the level of fluoride in the water and found that in the group of states with an average concentration of around 0.7 mg/L – the level used in artificial fluoridation – rates of child forearm fractures were 2.5 times greater than in the group of states with the lowest average concentration, which was about 0.4 mg/L.

The study used nationwide bone fracture data from over 100,000 children aged 4 to 10 years old, at the state level, obtained from insurance records. Water fluoridation information came from CDC public data. The authors concluded, "community water fluoridation.... is associated with an increased rate of fracture in children".

Teeth

Fluoride in the mouth makes all bacteria, good and bad, less able to stick to teeth, so that these microorganisms are more easily washed away by saliva or brushing, or swallowed into the stomach and gastrointestinal tract. This effect has the potential of disturbing both the microbiome of the mouth, and the gut. (88)

Dental fluorosis or fluorosed teeth, has been fully explained in Chapter 2.

The case for water fluoridation stood, and still stands, on the assumption that there is less tooth decay in children living in areas where water contains a *small* amount of fluoride. This observation and conclusion is lost when account is taken of the following:

Fluoride, delays the eruption of teeth (the slow development and growth), by at least two years. (89)

Even in 1933, Dr N. J. Ainsworth found that, in the town of Malden in Essex, UK, where the water was 4.5 - 5.5 ppm F, there was a tendency towards late eruption of teeth, while more than half of the permanent teeth from all age groups had obvious mottling. (90)

Short, in 1944, observed the same effect in areas, in the USA, where the drinking water was 2.6 ppm F. (91)

In 1948, Dr. Robert Weaver, C.B.E., M.D., F.D.S., then Senior Medical Officer to the Ministry of Education, in the UK, (1938-1959) compared two towns North Shields and South Shields, which were very similar towns, but on opposite sides of the River Tyne. South Shields' water was naturally fluoridated at 1.4 ppm. North Shields' water contained little fluoride (0.25 ppm). Weaver found that there was no difference in the amount of dental caries in people. What he did find was that South Shields' fluoridated water merely delayed the onset of caries by about three years. Such a delay appeared to show benefits when children in fluoridated areas were compared with those of the same age in control populations (non-fluoridated populations), but the rate of increase in decay was the same in both groups when adults and children were included. Weaver concluded that fluoride at or around 1 ppm did not reduce dental caries. He stated:-

"I think that the most important lesson to be learnedfrom this investigation is that the caries-inhibitory property of fluorine seems to be of rather short duration" and

".....there is in fact no very striking difference in the incidence of caries in the two towns". He advised that there was no case for water fluoridation. (92)

In the United States, K.K. Paluev, a professional statistician and research engineer, carried out a similar analysis of the 10-year, DMF figures (decayed, missing and filled teeth) from the fluoridated Grand Rapids and Newburgh (fluoridation trials) and showed that the same interpretation applied. He also showed beyond any doubt that the overwhelming majority of 16 yr-olds, fluoridated for ten years, had all their first permanent molars and one-half of the second permanent molars (which erupt at the age of 12 years and later) decayed or lost'. (93)

R. Ziegelbecker, in Austria, extended this approach to other fluoridation studies and has shown that the annual increments in tooth decay among older children in the non-fluoridated control communities decline faster than in the fluoridated areas, thus gradually nullifying the apparent benefit". (94)

In the early 1960s, Dr Albert Schatz Ph.D. co-discoverer of streptomycin, studied the effects of water fluoridation in Chile. His work demonstrated that fluoride did not reduce caries, it merely postponed them by an average of 1.2 years because of the slow eruption of teeth in fluoridated areas. Therefore, at the age of 12 yrs, the teeth of children living in fluoridated areas, are effectively 'younger' than those children in un-fluoridated areas. Carbohydrate foods only damage teeth once they have erupted, so the fluoridated teeth of a 12 yr old will have had less time to decay. When comparing the two groups of children, fluoridated or un-fluoridated, at the age of 12 yrs, the teeth of children living in fluoridated areas, will show less decay. Schatz said that the differences in decay between those two groups of children (fluoridated or un-fluoridated) became less as the children got older. He reported:

"Both groups will require the same amount of dental treatment over their lifetime. People in fluoridated area therefore pay for the same amount of dental treatment plus the added cost of fluoridation." (and the added cost of tooth veneers because of mottled or brown teeth). Author's comment in parentheses. (95)

Dr Waldbott, in his book, stated:

"The effect with increased fluoride intake and with mottling is a, delay in the eruption of teeth. This was recognised by a number of early investigators and was later attributed to fluoride-induced suppression of thyroid function." (96)

Dr Spittle agrees, saying:

"The apparent reduction in decay in the first teeth to appear, the deciduous teeth, is related to fluoride delaying the eruption of these teeth so that they have less time exposed to the decay-producing environment in the mouth. The timing of the eruption of the teeth is determined by thyroid hormones, and fluoride interferes with these." (97)

Merilyn Haines unearthed evidence from the 'Australian Research Centre Population Oral Health' (ARCPHO), statistics showing that the permanent teeth of children in largely un-fluoridated Queensland were erupting on average two years earlier than those of the children in the rest of Australia, which is largely fluoridated. (98)

Also, there are many people who have one or more permanent teeth that remain in the jaw-line, never descending into the mouth, for a lifetime. Is this the result of poor nutrition as suggested by Dr Weston Price, or could it also be the result of poisons, such as fluoride, having a detrimental effect on the developing foetus?

Carole Clinch BA, BPHE, Research Co-ordinator for 'People for Safe Water', compiled an important document on delayed eruption of teeth in 2010. Carole lists numerous research studies which have found delay, with just two studies which deny delay.

Here is the link to her well researched work,
http://www.newmediaexplorer.org/chris/Clinch_2010_Delayed_Eruption-Annotated_Bibliography.pdf.

A two-year delay of tooth eruption in fluoridated areas invalidates many epidemiological surveys that purport to show less decay in fluoridated children than in non-fluoridated children of the same age. On this, the whole case for fluoride is based. (99)

Brain

"Fluoride's ability to damage the brain is one of the most active areas of research today. Over 400 studies have found that fluoride is a neurotoxin (a chemical that can damage the brain). This research includes:

** Over 200 animal studies showing that prolonged exposure to varying levels of fluoride can damage the brain, particularly when coupled with an iodine deficiency, or aluminium excess;*

** 64 human studies linking moderately high fluoride with reduced intelligence;*

** Over 60 animal studies reporting that mice or rats ingesting fluoride have an impaired capacity to learn and/or remember;*

** 12 studies (7 human, 5 animal) linking fluoride with neurobehavioural deficits (e.g., impaired visual-spatial organization);*

** 3 human studies linking fluoride exposure with impaired fetal brain development;*

** 7 Mother-Offspring studies linking certain levels of fluoride in the urine of pregnant women to reduced IQ in their offspring."* (100)

In the 1990s, a British scientist, Jennifer Luke, discovered that fluoride accumulates to strikingly high levels in the pineal gland.

The pineal gland is located between the two hemispheres of the brain and is responsible for the synthesis and secretion of the hormone melatonin. Melatonin maintains the body's circadian rhythm (sleep-wake cycle), regulates the onset of puberty in females, and helps protect the body from cell damage caused by free radicals.

While it is not yet known if fluoride accumulation affects pineal gland function, preliminary animal experiments found that fluoride reduced melatonin levels and shortened the time to puberty. (101)

Based on this and other evidence, the National Research Council has stated that:

"Fluoride is likely to cause decreased melatonin production, (causing an adverse impact on sleep) and to have other effects on normal pineal function which, in turn, could contribute to a variety of effects in humans." (102)

"Human studies have shown that fluoride is transferred across the placenta and there is a direct relationship between fluoride levels in maternal and cord blood", which finds its way into the foetal brain. (103)

Fluoride is one of those developmental neurotoxicants, as is lead and other substances that pregnant women must avoid... as babies in the womb are exposed to more fluoride than their mothers due to swallowing amniotic fluid. By the time a child is born, up to 15 ounces of amniotic fluid are consumed per day.

When a pregnant woman is living in a fluoridated area or absorbing fluoride from other sources, her 3rd-trimester baby's fluoride intake level can be several times higher than a 5 yr-old child who swallows more than a pea-sized dab of fluoride toothpaste. (104)

That fluoride affects intelligence can be seen *in utero* at levels that are not (necessarily) seen as toxic to mothers. In 1991, the US Public Health Service (USPHS) reported in their review that;

“Millions of women in fluoridated cities ingest fluoride, (from many sources), and expose their embryos and foetuses to – 6.6 mg of fluoride per day... such levels could be deadly to the brains of developing babies.” (105)

Those children born after being exposed to fluoride in the womb can display either, hyperactivity or a sleepy disposition, for life. The incidence of children with ‘Down’s Syndrome’ increased significantly in fluoridated areas. (106)

In America, in fluoridated areas, it was found that there were more children with Attention Deficit and Hyperactivity Disorder (ADHD), 14% more. (107)

As of July 18, 2022, a total of 85 human studies have investigated the relationship between fluoride and human intelligence. Of these investigations, 76 studies have reported that elevated fluoride exposure is associated with reduced IQ in humans. (108)

According to Jennifer Giustra-Kozek, LPC, NBCC in her article of 3rd May, 2020:

“an increased viral or toxic load crosses over the blood-brain barrier causing (the) immune system to overproduce antibodies with (the resulting) increased inflammatory response in the brain. This causes brain encephalitis. Antigens attack the dopamine receptors in the basal ganglia, causing fluctuation in dopamine and leading to mental illness such as too much anxiety, Obsessive/Compulsive Disorder (OCD) or Oppositional Defiant Disorder (ODD).”

Prof. Philippe Grandjean of Harvard School of Public Health and others, in 2021, set out to find out, what was the lowest amount of fluoride needed to bring about a response in humans. This low dose is referred to as a ‘Benchmark Dose Analysis’ (BDA). Their risk assessment for fluoride was based upon the mother-offspring IQ studies of Bashash, Green, Riddell and Till. They found that,

“0.2 ppm of fluoride in a pregnant mothers’ urine was all it took to lower her offsprings’ IQ by one IQ point.”

This study was funded by the National Institute of Health (NIH) in the US. (109)

Video of Chris Neurath’s 1-hour presentation of ‘fluoride and neurotoxicity – the studies’, June 2nd 2020 followed by 24 mins of Q&A, can be found at:

<https://www.youtube.com/watch?v=KzNP8GfiGxA&eType=EmailBlastContent&elid=b7abeb2d-3fb1-45bf-a3ab-60f5e2c36085>

At a 1998 conference on fluoride in Washington, Dr Phyllis Mullenix, a neurotoxicologist at the Boston Children’s Hospital in Massachusetts, reported on the results of a study using two steroids to treat childhood leukaemia. One of these steroids had a fluorine atom in its structure, and this steroid caused behaviour patterns typical of hyperactivity. A follow-up study also showed a significant drop in the average IQ scores of the children given this steroid compared with those taking the non-fluoride drug. (110)

At the same conference, Professor Roger Masters reported a link between the blood levels of 280,000 children in Massachusetts and the use of silicofluorides for water fluoridation:

“Fluoride increases the toxic effects and absorption of lead. Behaviour associated with lead toxicity is an increase in violent crimes, substance abuse and learning disabilities, all of which are more frequently reported in communities using silicofluorides for water fluoridation than in areas not using them.”

They did not find this association with naturally occurring calcium fluoride (CaF₂). (111)

This is a warning to parents living in older properties which may still have lead water pipes leading to their houses and who use fluoridated toothpaste for their infants’ and children’s oral hygiene. (112)

A team of researchers at the Neurotoxicology Division of the EPA found,

“substantial evidence’ in 2009 that fluoride is one of about 100 chemicals that are ‘toxic to the developing mammalian nervous system.”

In 2015, these same researchers, designated 14 of these as the ‘gold standard’, because they provide evidence of neurodevelopmental effects in humans.

A Cochrane Review in 2017 concluded that ingestion of fluoride during pregnancy conferred no dental benefit, so this is a situation where risks are being taken for no proven benefit.

Dr Kathleen Thiessen said,

“The principal hazard at issue from exposure to fluoridation chemicals is IQ loss”

Professor Howard Hu said,

“Fluoride is a developmental neurotoxicant at levels of exposure seen in the general population in water-fluoridated communities”.

In 2020, scientists in China, from Zhengzhou University, reported an association between increased urinary fluoride and an increase in psychosomatic problems in children.

In 2021 the same team demonstrated that sodium fluoride exposure induces,

“anxiety- and depression-like behaviours in juvenile [Sprague-Dawley] rats, resulting in histological and ultrastructural abnormalities in the rat hippocampus and medial prefrontal cortex.”

They concluded that sodium fluoride increased the production of a particular enzyme in the hippocampus that has previously been associated with the onset of depression.

Their report, published in the American Chemical Society’s Journal of Agricultural and Food Chemistry, October 20, 2021, suggests that high levels of fluoride will perturb cell signalling pathways associated with this enzyme, SIK2, leading to the death of nerve cells and the development of psychosomatic problems. (113)

Roholm, during his investigation on fluoride in the 1900s, observed;

“ that (fluoride from) cryolite has a particularly harmful effect on the central nervous system..... with the marked frequency of nervous disorders”.

He called the illness ‘neurasthenia’, a condition defined as,

“an emotional and psychic disorder that is characterized by impaired functioning in interpersonal relationships and often by fatigue, depression, feelings of inadequacy, headaches, hypersensitivity to sensory stimulation (as by light or noise) and psychosomatic symptoms (as disturbances) of digestion and circulation.”

The 1995, landmark study, led by Phyllis Mullenix PhD found that rats exposed prenatally to fluoride, exhibited higher levels of hyperactivity. (114)

By 2010, more than 80 animal studies had confirmed what Mullenix et al reported. (115)

And, by 2020, more than 400 studies have found that fluoride is a neurotoxin, a chemical that can damage the brain.

Appendix 4 – list of references from 2006 on fluoride’s neurotoxicity at this link: <http://fluoridealert.org/wp-content/uploads/FAN-Neurotoxicity-One-pager-3-10-20.-pdf.pdf>. (116)

“Researchers also examined seven different regions of test animals’ brains after fluoride exposure, and found the substance in all seven areas. It proves that with long-term exposure, fluoride not only enters but accumulates in all areas of the brain.” (117)

A number of studies have shown that, when fluoride is linked to aluminium, the resulting compound, AlF₃, is more toxic to the brain. (118)

Dr Russell Blaylock, a neuro scientist and former brain surgeon stated that,

“It is important to avoid all fluoride products because fluoride is a powerful poison for many cells, especially brain cells and immune cells. It actually accumulates in the brain, especially in the pineal gland, where it can reach hundreds or even thousands of parts per million (ppm)... Studies have shown that, when fluoride and aluminium combine, the new compound (fluoro aluminium or ALF₃) is especially toxic to the brain, even in concentrations only half of what is added to drinking water.” (119)

Dr Christopher Exley, the world’s expert on aluminium, confirmed the action described above, that fluoride readily combines with aluminium. He stated in his newsletter, 15th January 2024, that in WF areas, *“fluoride in the diet significantly increases the absorption of dietary aluminium from the gastrointestinal tract.”* As mentioned before, the fluoride then enables the aluminium to pass the blood brain into the brain. Exley believes that,

“It is exposure to aluminium that is lowering the IQ of our children”, rather than the fluoride.

Animal studies

Julie A Varner, in 1993, lead a research team in the USA, at Binghamton University, NY. This team included a chemist, two psychologists and a neurotoxicologist. They studied rats and found that fluoridated drinking water helped to carry aluminium into the brain, producing,

“irregular mincing steps characteristic of senile animals.

Julie Varner et al then set out, in 1997, to find out whether aluminium and fluoride (aluminium fluoride, AlF_3) in drinking water played a role in age-related neurological damage similar to Alzheimer's disease. Altogether there were three studies, the first published in 'Neuroprotective Agents'. In one experiment there were twenty-seven rats divided into three groups and, for one year the rats were given either:-

- 1) distilled water, (the control group)
- 2) distilled water with 2.1 ppm the naturally occurring, calcium fluoride, NaF – nearly the same concentration of fluoride normally used in artificially fluoridated drinking water,
- 3) distilled water with 0.5 ppm aluminium fluoride, AlF_3 , (the aluminium and fluoride compound).

In both treated groups, 2 and 3, the aluminium levels in the brains of the rats were elevated relative to the control group drinking distilled water. It was a surprise to the researchers to find aluminium levels in the brain of the second group. They speculated that the fluoride in the drinking water given to group 2 may complex with any aluminium in the food given to the rats. This would result in the compound AlF_3 being formed, enable the aluminium to cross the blood-brain barrier. Both treated groups, 2 and 3 suffered neural injury and showed increased deposits of β -amyloid protein in the brain, similar to those seen in humans with Alzheimer's disease.

Of this study the authors wrote:

"While the small amount of AlF_3 ... required for neurotoxic effects is surprising, perhaps even more surprising are the neurotoxic effects of NaF at 2.1 ppm." (120)

All three of Varner's studies, confirmed the same result, finding that aluminium-fluoride interactions are associated with brain and kidney damage in laboratory animals. Aside from brain and kidney damage, there was an 80% unexpected mortality rate in the animals fed doses of sodium fluoride and aluminium similar to those found in artificially fluoridated drinking water.

The researchers also noted that:

"Not only did the rats in the lowest dose group die more often during the experiments, they also looked poorly, well before their deaths. Even the rats in the lowest dose group which managed to survive the 45 weeks looked to be in poor health." (121)

Contributing to the effect, described above, is the fact that the important blood-brain barrier, which helps to keep toxic chemicals, bacteria and viruses in the blood from entering the brain, is damaged by microwaves. Allan Frey's study of 1975 on rats found that low-level microwaves – one hundred times lower than those that people's brains are exposed to from their cell phones today – damaged the blood brain barrier. (122)

At least 20 laboratories in many countries have confirmed Frey's work over the years. (123)

In 2003, neurosurgeon Leif Salford at Lund University in Sweden, proved that disrupting the blood-brain barrier causes brain damage. (124)

For humans, aluminium may come to us through many sources; from food that has been wrapped or cooked in aluminium; food cooked in aluminium pots and pans; food and drinks kept and stored in bags or containers lined with aluminium, and toothpaste tubes lined with aluminium. It also comes into babies, children and adults as an additive in some vaccinations. (125)

Agora Lifestyles (2002) quotes three geographical studies that found Alzheimers was prevalent in areas with more aluminium in drinking water. (126)

Professor David C Bellinger PHD MSC (Harvard Medical School) in March 2020, said,

"The hypothesis that fluoride is a neurodevelopment toxicant must now be given serious consideration...Exposure to fluoride has increased substantially in recent decades...If the effect size reported by Green et al, and others are valid, the total cognitive loss at the population level that might be associated with children's prenatal exposure to fluoride could be substantial...It's actually very similar to the effect that's seen with childhood exposure to lead". (127)

Dr Phillipe Grandjean said,

"Fluoride seems to fit in with lead, mercury and other poisons that cause brain damage. The effect of each toxicant may seem small but the combined damage on a population scale can be serious, especially because the brain power of the next generation is crucial to us all....Fluoride is causing a greater overall loss of IQ points than lead, arsenic or mercury".

And Jordan Peterson, in an interview on 29th Nov 2017, was alarmed at the increasing number of people being refused entry into the USA armed forces because of having an IQ below 83 points. It amounted to one

in every 10 of those seeking entrance. It is to be noted that the USA has been 70% fluoridated, since the early 1950s.

Dr David Kennedy, past President of the IAOMT, reminds us that:

"It's reckless to allow organised dentistry to vouch for fluoride safety. Adverse effects outside of the oral cavity from ingested fluoride are not within the purview of dentistry, according to the Californian Board of Dental Examiners."

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