

A TREATISE ON FLUOROSIS – THIRD EDITION 2007

By A K Susheela^a

Reviewed by Albert W Burgstahler^b and Bruce Spittle^c

Following closely on the heels of the 2003 revised second edition, the revised third edition of Professor AK Susheela's *A Treatise on Fluorosis* includes significant new material and valuable additional chapters on diagnostic procedures and industrial fluorosis. Although it contains more material than before, this new edition, by using slightly smaller type, increasing the page height by 2.0 cm, and omitting the subject index, actually has four fewer pages than the second edition.

Additional topics include: delayed tooth eruption (Ch. 6), anaemia in pregnancy and low birth weight of babies (Ch. 7), expanded details on diagnostic procedures (Ch. 9), aspects of industrial fluorosis (Ch. 10), nutritional intervention (Ch. 12), an amplified glossary, and a brief historical fact sheet about fluorine.

The new edition contains the same nine case studies of fluorosis including details of a 12-year-old girl in the USA with dental fluorosis who took fluoride tablets on prescription from the age of one month to 6 years.

For successful treatment of pre-skeletal or the early stages of skeletal fluorosis, the author recommends two simple courses of action:

- Eliminate sources of fluoride entry into the body, especially by providing low fluoride drinking water on a sustainable basis.
- Use nutritional intervention supplying essential nutrients, vitamins, and antioxidants that can combat fluoride toxicity. Professor Susheela urges that the daily diet contain adequate amounts of calcium, iron, folic acid, vitamin C, vitamin E, and antioxidants. She recommends that these be got from food items, including vegetables, fruit, and dairy products rather than from supplements.

Professor Susheela finds that with these interventions the non-skeletal manifestations are likely to subside within a fortnight. The symptoms generally abate in the order: non-ulcer dyspeptic complaints, increased urination (polyuria), increased drinking (polydipsia), muscle weakness, and fatigue. She notes that joint pain is usually the slowest to disappear, but experiencing much less pain in the joints is likely to occur.

In her chapter on the global scenario of fluorosis she has added, in a sentence, that fluoride is a poison, and although slow acting, it causes a variety of health problems, particularly in the Indian context, when the diet is deficient in a number of nutrients and the body is unable to combat fluoride poisoning effects. She repeats the “take home” message for the professionals and policy makers in India that they should not refer to the practices of the “West” and that promoting fluoridation of dental products in India should be considered a “crime.”

She emphasizes that black rock salt (kala namak, fluorite, CaF₂) and daalmoth and other salty snacks, chat masala, pickles, and garam masala prepared using black rock salt have high fluoride levels and should be avoided. She advises that canned fish and fruit juices may contain fluoride used as a preservative.

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In the new 9-page chapter on industrial fluorosis, Professor Susheela notes that there are five aluminium smelters in India. She found that the smelter workers were likely to have symptoms of fluoride toxicity involving stomach problems, headache, tendency to urinate more frequently, fatigue, muscle weakness, pain in the major joints, asthma, and allergic reactions. When the workers adhered to diet counseling, she found that the symptoms disappeared in a high percentage of the subjects providing convincing evidence that the disease is mainly due to the workers ingesting fluoride through food and that, if the diet is poor in essential nutrients, the adverse effects of fluoride were very damaging. Through diet counseling she taught employees and their families to prepare food without fluoride containing substances and to not spend their earnings purchasing items containing a high fluoride level. With this intervention the urinary fluoride content fell for many workers, e.g., from 10.72 mg/L during the initial screening to 1.82 mg/L after 6–8 weeks of practising the interventions that were taught. Similarly, the serum fluoride levels fell, e.g., from 0.086 mg/L to 0.061 mg/L after 6–8 weeks of intervention. Nail fluoride levels fell over 5 years, e.g., from 2.50 mg F/kg ash weight to 2.01 mg F/kg ash weight. Blood hemoglobin levels rose in many with the interventions, e.g. from 16.1 g/dL to 16.5 g/dL in 4 months. Professor Susheela concluded that when employees practised the interventions they hardly ever suffered from headache, stomach problems, muscle weakness, polyuria/polydipsia, and anaemia. Their work output improved. She considered that the fluoride the smelter workers inhaled or ingested in their work environment was insignificant compared to the consumption through food, water, dental products and drugs.

The new 6-page chapter on diagnostic procedures notes that the clinical history, laboratory tests, and radiological examination are important for the early diagnosis of fluorosis. Fluoride levels can be measured in the serum, urine, drinking water, and, in the case of industrial workers, the nails. Blood haemoglobin levels are of value. If radiographs are taken of joints, the forearm should also be X-rayed to look for calcification of the interosseous membrane or a wavy outline of the radius and ulna.

In the chapter on the removal of fluoride from drinking water, Professor Susheela notes that reverse osmosis is one of the best for obtaining good water but is expensive and that it is not easy to get a defluoridation system. In her experience she finds that it was likely that each village has a safe water source and that it is important to locate these sources through testing all the water resources available.

This 3rd edition of *A Treatise on Fluorosis*, written by a dedicated experienced investigator and teacher, provides a wealth of information on fluoride toxicity and is a benchmark in the field. Professor Susheela is passionate about improving, through the education of health professionals, the plight of the 66 million people in India at risk of fluoride toxicity from drinking fluoride contaminated water. She notes that the maximum permissible level of fluoride in India is 1 ppm (lower than the maximum contaminant level of 4 ppm currently allowed in the USA), and that, as fluoride is injurious to health, it is a case of the lesser, the better. As a practical handbook for physicians, dentists, and other health care providers who may be encountering subjects suffering from fluoride intoxication, *A Treatise on Fluorosis* is an invaluable guide and reference source.

FLUORIDE POISONING: IS FLUORIDE IN YOUR DRINKING WATER —AND FROM OTHER SOURCES—MAKING YOU SICK?

By Bruce Spittle^a

Reviewed by Peter Meiers^b

Bruce J Spittle, MB ChB with distinction, and DPM (Otago), who authored this remarkable little book appropriately titled *Fluoride Poisoning* (and subtitled: *Is fluoride in your drinking water—and from other sources—making you sick?*), is a long-time resident of Dunedin, New Zealand. He is a Fellow of the Royal Australian and New Zealand College of Psychiatrists, recipient of many prizes and awards, a former Senior Lecturer, Department of Psychological Medicine, University of Otago, Dunedin, NZ, and Consultant Psychiatrist for the Otago District Health Board, 1978–2004. Readers of *Fluoride* know Dr Spittle mainly as co-editor (1994–98), now managing editor (since 1999) of *Fluoride*. He has published several articles and editorials on the health effects of fluoride and was a



Bruce Spittle

peer reviewer for the University of York's recent systematic review of public water fluoridation.¹ The idea of writing a book on *Fluoride Poisoning* occurred to him at the 27th conference of the International Society for Fluoride Research at Beijing, China, 9–12 October 2007. For Dr Spittle to complete and publish this carefully documented book by December 2007 reveals how extraordinarily familiar he is with the literature on the health effects of fluoride.

Writing such a book also takes enormous courage, for earlier authors, such as the late Drs Leo Spira and George L Waldbott, were harassed relentlessly after they

^aBruce Spittle. *Fluoride Poisoning: is fluoride in your drinking water—and from other sources—making you sick?* Forewords by Albert W Burgstahler and AK Susheela. Illustrated with 50 b/w figures, vi + 66 pages including index; 2008. Published by Paua Press Limited, 727 Brighton Road, Ocean View, Dunedin 9035, New Zealand (<http://www.pauapress.com>). ISBN 978-0-473-12991-0.

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Also published by Paua Press Limited is an abridged version, *Fluoride Fatigue*, illustrated with 13 b/w figures, vi + 32 pages including index. ISBN 978-0-473-13092-3. RRP: £4.99, €5.99, US\$8.99, CAN\$8.99, A\$9.99, NZ\$10.99, and J¥899. This is also available for the RRP plus shipping from www.RenaissanceBooks.co.nz and www.AbeBooks.com or directly from the author as above, including shipping, for the special prices of £2.99, €3.99, US\$5.99, CAN\$5.99, A\$6.99, NZ\$7.99, and J¥699.

The prices are the same for the revised 2nd printings, January 2008, (*Fluoride Poisoning: is fluoride in your drinking water—and from other sources—making you sick?* Illustrated with 63 b/w figures, vi + 78 pages including index; *Fluoride Fatigue*, illustrated with 46 b/w figures, vi + 62 pages including index.

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reported their early observations on toxic effects of fluoride in drinking water. At that time, to their disadvantage, not much was known about plausible mechanisms of fluoride toxicity, especially in regard to the allergic-type reactions they encountered. In the late 1970s, a series of papers revealed that fluoride, in the presence and with the aid of calcium, releases inflammatory mediators (such as histamine) from leucocytes and mast cells.^{2,3}

Since the 1980s, receptors and signaling pathways, such as the phosphatidylinositol pathway, have become the focus of related biochemical research showing that protein phosphorylation and release of calcium from intracellular stores combined with extracellular uptake, are triggered by fluoride acting on regulatory G-proteins.^{4,5} These effects are involved in hormonal and immunologic responses, transmission of nerve impulses, cell division, and even neoplastic transformations.^{6,7} It is the action on G-proteins, along with formation of corrosive hydrogen fluoride in the stomach, as well as inhibition of enzymes, to which Dr Spittle relates observations of chronic poisoning by fluorides as used in water fluoridation and from other sources.

As illustrated in *Fluoride Poisoning*, individuals who are sensitive to fluoride may experience a wide variety of symptoms: chronic fatigue, not relieved by extra sleep or rest; headaches; nausea; visual disturbances; dryness of the throat and excessive water consumption; gastrointestinal disturbances; spasms, aches and stiffness in the muscles; arthritis-like pains; skin rash or itching; and others. Citing case reports, including double-blind tests, from the research of Drs George Waldbott, AK Susheela, Harvey T Petraborg, Hans Moolenburgh, GW Grimbergen, and others, plus some of his own observations in New Zealand, Dr Spittle shows that such symptoms of chronic fluoride intoxication exist worldwide. His book also contains illustrations of some of the abnormalities underlying these symptoms.

Although laboratory data do not always show a consistent correlation between fluoride in blood or urine and the outbreak of illness, the association becomes obvious as the symptoms diminish or disappear, usually within a week or so, if the victim avoids fluoride exposure as much as possible, and re-appear upon ingestion/use of fluoride-containing products. In this simple manner, anyone who is being made ill from fluoride or is hypersensitive to it can readily determine if the symptoms may be related to fluoride. As an aid, Dr Spittle lists many possible sources of the chemical that should be considered and avoided during such tests.

Considerable space is devoted in the full version of the book to addressing the contention of health professionals that the concept of a chronic fluoride toxicity syndrome has no sound basis, but that the illness reported is altogether of a psychosomatic origin. As Dr Spittle notes, one of the reasons why this discussion will be with us for many years to come is that “public health advocates of fluoridation tend to consider of little or no scientific value evidence contradicting their views” and thus are able “to maintain and safeguard their self-interests.” It seems, therefore, that the saying “science progresses funeral by funeral” is especially true in the case of the fluoride/fluoridation issue.

In the “closing comments,” claims of “beneficial” systemic or topical effects of fluoride on the teeth are reviewed, along with a brief look at the impetus for water fluoridation, for which measure the green light was given after only five years of trial experimentation, i.e., long before any permanent teeth of the exposed children had erupted.

Increasingly, former advocates of water fluoridation are thinking for themselves rather than blindly accepting the views of so-called “prestigious” authorities and organizations. This reviewer, along with Dr Spittle, sees a new light slowly dawning—a process that might be speeded up by feedback from readers, thereby enabling this important little book to be updated from time to time. Although short and concise, it is a book that deserves widespread international readership. May it help end needless suffering of fluoride-exposed individuals who are not aware of the possible cause of their troubles but are now encouraged to try a very simple and often highly effective remedy.

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FLUORIDE POISONING: IS FLUORIDE IN YOUR DRINKING WATER —AND FROM OTHER SOURCES—MAKING YOU SICK?

By Bruce Spittle^a

Reviewed by Christopher Neurath^b

Debate over the existence of fluoride hypersensitivity has simmered since the early 1950s. At that time Dr George L Waldbott began publishing clinical case reports of patients with skin rashes, gastrointestinal disturbances, headache, and fatigue after drinking artificially fluoridated water with just 1 mg/L of fluoride.

Dr Bruce Spittle's book *Fluoride Poisoning* focuses on this syndrome, compiling important data from decades past to the present. Health care providers, scientific researchers, advocates on both sides of the fluoride debate, and individuals who believe they may be sensitive to fluoride can benefit from this book.

Spittle's book brings together most of Waldbott's case reports plus reports by others initially published in a wide range of research papers, reviews, and books. It is a great convenience to have all of this information gathered in one short volume. The additional studies include case reports and syndrome descriptions from Drs Petraborg, Susheela, Moolenburgh, Grimbergen, and Spittle himself. An omission is discussion of Dr Leo Spira's work that began in the 1920s. Spira's own book published in 1953 is now readily available again so readers may want to refer to it as an interesting historical adjunct to *Fluoride Poisoning*.¹

Spittle considers criticisms against the evidence that some people are especially sensitive to fluoride. In particular, he responds to the main concern that symptoms are psychosomatic in origin. This charge is adequately addressed by the case reports that describe blinding of the subject and sometimes also the experimenter. Such double blinding is the "gold standard" ruling out bias and explanations such as psychosomaticism.

While fluoridation proponents often deny the validity of case report evidence, even when of high quality, they have almost never undertaken their own studies to find out whether some people have fluoride sensitivity. One important exception

^aBruce Spittle. *Fluoride Poisoning: is fluoride in your drinking water—and from other sources—making you sick?* Forewords by Albert W Burgstahler and AK Susheela. Illustrated with 50 b/w figures, vi + 66 pages including index; 2008. Published by Paua Press Limited, 727 Brighton Road, Ocean View, Dunedin 9035, New Zealand (<http://www.pauapress.com>). ISBN 978-0-473-12991-0.

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was Dr Reuben Feltman, a dental researcher who conducted a large study in the 1950s with over 1000 pregnant women and their children.² The main goal of his investigation was to find out whether systemic fluoride, ingested in the form of daily tablets, reduced tooth decay. However, his study included clinical observations that revealed about 1% of his subjects were sensitive to fluoride at a dose of 1 mg of fluoride ion/day. Feltman described symptoms identical to those reported by Waldbott and others:

“One percent of our cases reacted adversely to the fluoride. By the use of placebos, it was definitely established that the fluoride and not the binder was the causative agent. These reactions, occurring in gravid women and in children of all ages in the study group affected the dermatologic, gastro-intestinal and neurological systems. Eczema, atopic dermatitis, urticaria, epigastric distress, emesis, and headache have all occurred with the use of fluoride and disappeared upon the use of placebo tablets, only to recur when the fluoride tablet was, unknowingly to the patient, given again.”³

Feltman’s findings are important because they came out of a high quality study conducted by dental supporters of fluoride. Repeated blind challenges, just as in some of the cases described by Waldbott, Moolenburgh, and others, convinced Feltman that the syndrome was not psychosomatic and was caused by fluoride rather than other chemicals.

Spittle provides further evidence that fluoride sensitivity is real in an interesting section on animal case reports. These concern domestic and pet animals, not laboratory animals. The animals were, just like humans, exposed to artificially fluoridated drinking water. Species included chinchillas, alligators, caimans, rats, and horses. Spittle points out that it would be hard to dismiss the observed symptoms as psychosomatic, since presumably the animals had no awareness that their water had been altered with added fluoride.

Spittle also discusses other adverse health effects of fluoride besides hypersensitivity, but he does not have enough space to present more than a brief summary of these effects. The recent US National Research Council report, *Fluoride in Drinking Water: A Scientific Review of EPA’s Standards*, came to 507 pages, yet even that must be considered a preliminary summary of the thousands of scientific articles on toxic effects of fluoride that have been published in many journals including *Fluoride*.

The evidence of fluoride sensitivity presented in Spittle’s book is persuasive, given the use of double blind challenges by several independent researchers working in different parts of the world. The onus is therefore on those who question this evidence to conduct large, controlled clinical studies, such as the investigation by Feltman and Kosel. The current weight of evidence is that fluoride sensitivity is real, affecting roughly 1% of all people exposed to a dose of 1 mg of fluoride ion/day or whose drinking water contains 1 mg/L of fluoride. *Fluoride Poisoning* should help turn up the heat on the debate.

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