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**ARTIFICIAL FLUORIDATION
IS WATER POLLUTION**

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Original Studies on which Artificial Fluoridation of Water Supplies was Based were Worthless - Court Evidence

Part II

Court evidence shows that the key studies on which artificial fluoridation depend were worthless. Evidence presented before the court, including cross-examination of Dr. Treadley Dean "The Father of Fluoridation"^{1,2}, by Attorney Mr. Dilling, assisted by Dr. F.B. Exner is published in the book by Dr. Exner³. Part I of this article was published in *The Australian Fluoridation News* Vol. 44, No 4, July-August 2008.

Dean's early Studies

"From 1931 to 1953, Dr Dean was in charge of fluorine dental-research for the Public Health Service. In 1931, it was discovered that the endemic dental fluorosis which, till then, had been known as 'mottled enamel', 'Texas Teeth', or 'Colorado brown-stain' was a manifestation of chronic fluorine poisoning ('fluorosis'), produced by fluorine in the water-supply during the tooth-forming period. It was also recognised that if there was enough fluorine in the water to poison the tooth-buds and disfigure the teeth, there was also enough to poison the entire body.

"In 1935, Dr Dean referred to mottled enamel as 'the dental sign of chronic endemic fluorosis'. [Chicago Transcript, (C.T.) p. 2065]. And, in 1938, he wrote:

'Although the external signs of the affliction are dental, the problem of fluorosis is becoming one of enlarging interest to physicians, especially pediatricians, orthopedists and industrial hygienists, and to epidemiologists, sanitary engineers, water chemists, biochemists, veterinarians and geologists.' [C.T. 2020]

"Fluorosis was immediately recognised as a public health problem; and Dr Dean was given the task of finding out how much fluorine could safely be permitted in a public water supply. He examined some 30,000 children in Virginia, North and South Carolina, Tennessee, Arkansas, Florida, Illinois, Iowa, South Dakota, Colorado and Texas to determine the amount and severity of mottling associated with various fluorine levels. [C.T. 1760]

"He devised a classification of mottled enamel in terms of

severity, which he published in 1934, and in revised form in 1935 and 1938. His classification has been universally adopted; and it has become the standard by which we may know exactly what is meant by such terms as 'questionable', 'very mild', 'mild', 'moderate', or 'severe' mottling. **No understanding of fluoridation is possible without knowing this classification** since it is the basis of the entire literature on dental fluorosis.

The "Maximum Tolerance" for Fluorine

'MILD (Fig 4) The white opaque areas in the enamel of the teeth involve at least half of the tooth surface. The surfaces of molars, bicuspid and cuspid subject to attrition show thin white layers worn off and the bluish shades of underlying normal enamel. Light brown stains are sometimes apparent, generally on the superior incisors. (The upper front teeth.) [C.T. 2041-42]

'MODERATE (Figs 5 and 6) No change is observed in the form of the tooth, but generally all tooth surfaces are involved. Surfaces subject to attrition are definitely marked. Minute pitting is often present, generally on the labial and buccal surfaces. Brown stain is frequently a disfiguring complication. For the most part the stain ranges from tan to chocolate in colour and not infrequently involves as much as half the labial surface. It must be remembered, however, that the incidence of brown stain varies greatly in different endemic areas and many cases of white opaque mottled enamel, without brown stain, are classified as 'moderate' and listed in this category.' [C.T. 2044]

"It must be remembered that this classification was based on the examination of children. And it must further be remembered that the brown stain is not present when the teeth erupt, but comes later and gets darker with age. Consequently, the brown stain that is 'so faint as to be almost indistinct' in a child with 'very mild' mottling, may be quite prominent when the child becomes an adult.

"Contrary to what we are frequently told, the white flecks and spots are quite readily observed. Maybe you have to be specially trained to know what caused them;

but anyone with eyes can see them. Even with no brown stain, they are frequently 'so obvious as to be revealed at the first smile'. In 1937, Dean wrote:

'At Webster City, East Moline and Junction City, mouth mirrors free from blemishes and new explorers were used in making the examinations. . . . At Clovis, the diagnosis of the degree of mottled enamel was based on a careful visual examination without the aid of mouth mirrors . . . The signs of chronic endemic dental fluorosis are so objective that little variation in incidence is noted in using one or the other of these methods.' (Emphasis added.) [Exhibit 35, p. 1252]

"When Dean commenced his studies in 1931, he hoped to find a level of fluorine in water supplies below which no fluorosis would be produced. He quickly found that there were occasional cases of 'very mild' and 'mild' fluorosis even where there was no measurable fluorine in the water supply. Dean called these 'sporadic cases' as distinguished from endemic fluorosis which was found wherever there was fluorine in the water.

"In 1935, it was arbitrarily decided that if less than 10 per cent of children showed mottling that was 'very mild' or worse, the community would be given 'a negative mottled enamel index' for public health purposes, which meant for purposes of deciding whether the community might retain its water-supply. [C.T. 2065-66]

"Dean did not say so in Chicago, but it was on the basis of his work that the Public Health Service, in 1942, set 1.0 ppm as the maximum tolerance for fluorine in a public water supply. Above that level, there would be so much harm to so many people that the city must change its water supply. Removal of the fluorine was not considered feasible. [C.T. 1759 and 1767]

The Galesburg-Quincy Study

"In 1938, Dean's attention turned from fluorine damage to its effect on tooth-decay. First he examined four or five thousand children in South Dakota and found less decay in places where mottled enamel was endemic. This led to the Galesburg-Quincy Study. [C.T. 1770-72]

"Actually, four cities were studied: Galesburg (1.9 ppm of F), Monmouth (1.6 ppm) and Quincy and Macomb (each with 0.2 ppm). All are in Illinois. [C.T. 1940-41] Tooth decay was assessed in terms of total decayed, missing and filled teeth per hundred children, the so-called DMF rate.

"In his original article, Dean wrote that:

'There was approximately twice as much dental caries at Macomb, and more than three times as much at Quincy as was observed at Galesburg or Monmouth.' [Exhibit 43, p. 24]

"And, in his direct testimony, he told the court that he plotted the findings on graph paper and found a three to one difference. [C.T. 1778]

"However, the data elicited at the trial were:

City	Fluorine in ppm	Children examined	DMF teeth per 100 children
Galesburg	1.9	243	194
Monmouth	1.6	99	208
Macomb	0.2	63	368
Quincy	0.2	291	628

[C.T. 1940-1946]

"From these figures, it was shown that Monmouth, with 1.6 ppm of fluorine, had 43.5 per cent less tooth-decay than Macomb with 0.2 ppm ($208 \div 368 = .565$). But it was also

shown that Macomb, with 0.2 ppm had 41.4 per cent less decay than Quincy, also with 0.2 ($368 \div 628 = .586$). **The differences are substantially the same; and the 'benefit' that the study was alleged to show vanishes.**

The Vanishing "Benefit"

"The plain fact is that Dr Dean knew when he did the study of the 21 Cities that the study was worthless by his own criteria. He has known it ever since.

"He knew it when he selected Aurora as the 'ideal city' for comparison with Grand Rapids. He knew it when he testified at Chehalis. . . . **under a stipulation that his testimony could not be challenged.**

"Thus the '21 Cities' with 7,257 children, actually boil down to two cities (East Moline and Kewanee) in the one part per million range, to be compared with four cities using 'fluorine-free' water from Lake Michigan. These were Evanston, Oak Park, Waukegan and Michigan City. The combined DMF rate of these four was 847. The combined rate for East Moline and Kewanee was 321, or 62 per cent lower. [Exhibit 45, Table VIII]

"However, it was pointed out that Evanston, using Lake Michigan water, has a DMF rate 54 per cent lower than Michigan City, also using Lake Michigan water. Dean attributed the difference to:

' . . . difference in population . . . a relatively high diet, wonderful care.'

But he admitted that no allowance for such factors was made in his report. [C.T. 1959-60]

"He agreed that diet, and especially fermentable carbohydrates, is important as influencing decay. But he would not admit that calcium was important to good teeth.

Mr Dilling: 'Doesn't calcium have something to do with building good teeth?'

Dr Dean: 'It is so stated. I don't know of any clear-cut evidence of that.'

"With regard to diet in the 21 Cities, Dean said in his direct testimony:

'Now if the question of food comes up, these communities are more or less supplied from warehouses belonging to these chain stores that they are getting almost the same food.' [C.T. 1787-88]

"But he had to admit that neither at Galesburg-Quincy nor in the 21 Cities had he made individual or group studies of diet, or of the consumption of fermentable carbohydrates. Neither had he considered the effects of diet in evaluating or reporting his findings. [C.T. 2009 and 2015]

"There were two examinations of 12, 13 and 14-year-old children at Galesburg - in 1938 and again in 1940 - and the results were not the same. The DMF rate was 21.6 per cent higher in 1940 than in 1938.

"The same thing happened at Aurora, where children were examined in 1939 and again in 1945. The DMF rate was 15 per cent higher in 1945 than in 1939.

"Dean explained both differences as caused by examiner variability; but he had to admit that no account was taken of this source of error in evaluating or reporting his findings.

"Obviously, when a 15-20 per cent examiner variability is added to a 54 per cent variation caused by population and dietary differences, there is less than nothing left of the 60 per cent 'benefit' that his studies are alleged to show. Also, the 'benefit' in the Galesburg-Quincy Study was closer to 2 per cent (43.5 minus 41.4) than to 60.

"We were reminded of the words of Dr Frank Bull at the 4th Annual Conference of State Dental Directors, in 1951:

'When they get through adding up all the percentages of decay that we can reduce by such methods, we end up in a minus. When they take us at our own word they

make awful liars out of us.' [Loc. cit. p. 31]

"Except that, in this case, it is when we compare the claims with the methods and data."

The EXPECTED Disfigurement

"Since Dean and the other promoters base their claims on the data from the 21 cities as published, the published data can be taken at face value without regard to their intrinsic value when evaluating Dean's statements and testimony. The data, as published, were as follows:

PERCENTAGE INCIDENCE OF FLUOROSIS IN THE "21 CITIES"									
City	PERCENTAGES								
	Fluorine in ppm	Children Examined	Normal	Questionable	Very Mild	Mild	Moderate	Severe	"Definite" Fluorosis
Colorado Spgs	2.6	404	6.4	19.8	42.1	21.3	8.9	1.5	73.8
Galesburg	1.9	273	25.3	27.1	40.3	6.2	1.1	0.0	47.6
Elmhurst	1.8	170	28.2	31.8	30.0	8.8	1.2	0.0	40.0
Joliet	1.3	447	40.5	34.2	22.2	3.1	0.0	0.0	25.3
Aurora	1.2	633	53.2	31.8	13.9	1.1	0.0	0.0	15.0
East Moline	1.2	152	36.8	31.6	29.6	2.0	0.0	0.0	31.6
Maywood	1.2	171	39.2	27.5	29.2	4.1	0.0	0.0	33.3
Kewanee	0.9	123	52.8	35.0	10.6	1.6	0.0	0.0	12.2
Pueblo	0.6	614	72.3	21.2	6.2	0.3	0.0	0.0	6.5
Elgin	0.5	403	60.5	35.3	3.5	0.7	0.0	0.0	4.2
Marion	0.4	263	57.4	36.5	5.3	0.8	0.0	0.0	6.1
Lima	0.3	454	84.1	13.7	2.2	0.0	0.0	0.0	2.2
Middleton	0.2	370	84.3	14.6	1.1	0.0	0.0	0.0	1.1
Zanesville	0.2	459	85.4	13.1	1.5	0.0	0.0	0.0	1.5
Quincy	0.1	330	93.0	6.7	0.3	0.0	0.0	0.0	0.3
Portsmouth	0.1	469	88.9	9.8	1.3	0.0	0.0	0.0	1.3
Elkhart	0.1	278	91.3	8.3	0.4	0.0	0.0	0.0	0.4
Michigan City	0.1	236	97.5	2.5	0.0	0.0	0.0	0.0	0.0
Evanston	0.0	256	91.8	6.6	1.6	0.0	0.0	0.0	1.6
Oak Park	0.0	329	90.6	8.8	0.6	0.0	0.0	0.0	0.6
Waukegan	0.0	423	97.9	1.9	0.2	0.0	0.0	0.0	0.2

Data from Exhibit 45, page 23, Table XL

"In the same 1942 report in which Dr Dean said that mottling at one ppm has no practical aesthetic significance, he also said:

'It is obvious that whatever effect the waters with relatively high fluoride content (over 2.0 ppm of F) have on dental caries is largely of academic interest; the resultant permanent disfigurement of many of the users far outweighs any advantage that might accrue from the standpoint of partial control of dental caries.' [Exhibit 48, p. 2]

"As shown in the foregoing Table, the only one of Dean's 21 cities with 'over 2.0 ppm' of fluorine was Colorado Springs. This was where Dr Black found the condition he describes as: 'The struggle for a better appearance of the teeth, or the stoical endurance of a terrible affliction is certainly upon from 30 to 60 per cent of the persons . . .' (See part I of article - editor.) It seems that Dr Dean's statement, above, should take some sort of prize for understatement.

"And the same year that Dean wrote the statements quoted above, the Public Health Service, on the basis of Dean's own findings, set **1.0 ppm as the maximum tolerance for fluorine in a public water supply.**

"Throughout his testimony, Dr Dean did his best to discount the incidence, severity and importance of mottling at one part per million. And, at every turn he was confronted with his own contrary data and statements, and with the contradictions in his own testimony.

Dean Refused to "Project" his Findings

"When faced with the implications of his own statistics as applied to the City of Chicago, Dean objected to their being so applied. When it was shown that his Kewanee figures would indicate that 18,032 children in the City of Chicago would get 'mild' mottled enamel, Dean said:

'No, I wouldn't project anything in the millions on the basis of 110 examinations.'

Mr Dilling: *'You don't feel these Kewanee figures indicate anything one way or the other?'*

Dr Dean: *'I may have seen that; but I certainly wouldn't try to project them into the city of 3,600,000.'*

Mr Dilling: *'Do you have any accurate figures on the mottling if these aren't accurate?'*

"And Dr Dean's answer was not responsive to the question.

"But the fact remains that Dr Dean did project his figures to the City of Grand Rapids when he fluoridated its water. Moreover, he has been responsible for projecting them 'in the millions' by advocating fluoridation elsewhere."

Let the Reader Beware

"Two things stand out in reading the Transcript. The first is the extent to which the writings of the present writer are born out by the testimony, especially as they will be found in his chapters of the book: 'The American Fluoridation Experiment' (Devin-Adair, New York, 1957).

"The other thing that stands out is Dr Dean's apparent lack of any sense of responsibility for scientific accuracy or forthright reporting. Indications of this have been noted above; and many more will be found, especially by those with mathematical or scientific training. They are particularly manifest in such expressions as:

'No, I just published it. Any statistician would be familiar with a small sample.'

'Well, I imagine anyone who reads them would know that.'

'I listed it.'

'Just reported it and let anyone pick that up that objected to it.'

"And we have his repeated admissions that facts and factors which he knew to be important had been disregarded or unreported.

"But perhaps the most revealing statement is the one in which he places the full burden for critical evaluation of his work on the reader:

Mr Dilling: *'Did you note that you were suspicious of your statistics?'*

Dr Dean: *'I didn't. I expect a person who reads a paper to do it critically and analytically.'*

"That may be all very well for the person who has access to the original reports, and has the time and talent to evaluate them. And it is true that I, for one, had read them critically and analytically. It was because I had done so that Dean was confronted with the contradictions, fallacies and misstatements in his own writings and testimony.

"But what of the reader, be he layman or scientist, who must depend on the "about a hundred articles and six or eight chapters in books" that Dean said he has written. Only a scattered handful of these give enough of the original data to offer any basis for critical evaluation. All the rest are articles **about** the alleged findings and are devoted to unsupported and unsupportable opinions and conclusions, with just enough impressive charts to serve as window-dressing. And they are filled with tongue-in-cheek statements such as those we have noted.

"These articles have been the basis of the fluoridation promotion. They have been accepted almost as gospel, through an apparently misplaced faith in Dr Dean and the Public Health Service."

The impact of Minerals in water supplies on dental fluorosis and dental decay

When Dean was confronted with the fact that two of his "21 cities" study, Evanston and Michigan City, both used Lake

Michigan water, yet Evanston had far less tooth decay, with a Decay, Filled or Missing (DFM) tooth rate 54% lower than Michigan City, Dean attributed the difference to:

' . . . difference in population . . . a relatively high diet, wonderful care.'

"He admitted that no allowance for such factors was made in his report. [C.T. 2022]

"But he would not admit that calcium was important to good teeth."

High mineral content of Water in Study Towns

Of the numerous Public Health Service papers in their *Fluoride Drinking Waters* 636 page publication⁵, ten provide tables of the mineral content of the water supplies studied. Between four and twenty towns are shown in each Table, over 1000 individual analyses, including a few pre and post filtering analyses.

In this large number of analyses, all have relatively high levels of minerals compared to water in Sydney or Melbourne. The need for study populations to be very similar in all respects, including their water supplies, means that the difference in mineral content of water supplies alone between "high" and "low" fluoride contaminated towns renders these studies invalid.

Yet Dean, although agreeing that diet is important in influencing tooth decay, admitted that no allowance was made in his report for such factors as *' . . . differences in population . . . a relatively high diet . . . wonderful care.'* [C.T. 1959-60]

A typical analysis is shown as Table 5 in the paper *"Studies of the Minimal Threshold of the Dental Sign of Chronic Endemic Fluorosis (Mottled Enamel)"* by H. Trendley Dean and Elias Elvore:

Table 5 - Analyses of the waters used

	Colorado Springs	Monmouth	Galesburg	Pueblo (north of Arkansas River)
	Parts per million			
Residue on evaporation	46.5	1,031.5	1,080.0	588.0
Loss on ignition	9.0	62.7	51.2	75.0
Fixed residue	37.5	968.8	1,028.8	513.0
Silica (SiO ₂)	16.0	14.0	12.8	20.0
Iron (Fe)	.12	.18	.15	.14
Aluminium (Al)	.5	.3	.3	0
Calcium (Ca)	7.2	69.3	62.2	83.6
Magnesium (Mg)	.6	26.6	25.7	27.3
Sodium and potassium (calculated as Na)	5.4	249.9	288.8	54.9
Bicarbonate (HCO ₃)	24.4	283.0	296.5	187.8
Sulfate (SO ₄)	4.5	412.1	341.4	244.5
Nitrate (NO ₃)	1.0	3.3	3.3	5.2
Chloride (Cl)	1.0	117.0	196.0	16.5
Fluoride (F)	2.0	1.8	1.9	.6
Phosphate (PO ₄)	0	0	0	0
Boron (B)	0	.8	.9	0

Calcium varies from 7.2 to 83.6 ppm;

Magnesium varies from 0.6 to 27.3 ppm;

Sodium varies from 5.4 to 288.8 ppm;

Sulphate varies from 4.5 to 412.1 ppm.

The fluorine iron has a strong affinity for elements such as calcium in the water, (calcium is an antidote for fluoride poisoning). When ingested by man, less fluoride from these hard-water supplies is therefore available for absorption by the body than from low mineral content soft-water supplies.

It can therefore be expected that the adverse health effects of fluoride will be greater in populations consuming soft-water supplies to which toxic fluoride chemicals have been artificially added, than in Dean's studies.

Poor Diet, Not Lack of Fluoride, The Cause of Tooth Decay

As noted above, even Dean agreed that diet is important as influencing tooth decay. Most readers, with very little

thought, instinctively know that there is at least some relationship between diet and health. A large rail-side advertisement by a well known commercial food products brand gave hundreds of thousands of rail commuters to Sydney a daily reminder of this relationship for over half a century with their slogan:

"What you eat today walks and talks tomorrow."

A number of detailed studies of the relationship of diet to general health and tooth decay have established this very clear link (which Dean chose to ignore, except in the instance where his fluoride - tooth decay hypothesis failed!). An example is the mammoth study by Dr Price.

The Study by Dr. Weston A. Price, D.D.S.

This classic work *Nutrition and Physical Degeneration*⁶ by Dr. Price was a 10 year study, supported by the American Dental Association, first printed in 1938.

Dr Price studied primitive races in countries throughout many parts of the world, including Australian Aborigines. His studies clearly revealed that primitive races with natural nutritious diets normally had good general health, with excellent teeth and well-formed dental arches, with wide faces and regular, well-spaced teeth.

When they started consuming a western diet comprised largely of white flour and sugar, to the neglect of natural nutritious foods, there was a consistent deterioration in general and dental health and extensive tooth decay.

Children of the parents consuming a western diet were born with narrow facial features and poorly formed dental arches, often with crowded teeth. There was often rampant tooth decay.

On occasions when these races resumed a natural diet, the children of these parents regained broad facial features and well-formed dental arches with healthy teeth.

Dr Price stated:

"Fluorine treatment, like dental extraction, cannot be a panacea for dental caries."

After a limited study of the impact of fluorine on rats, including the amount of Calcium, Phosphorus and Magnesium in blood serum, he stated:

"These data . . . also suggest that ingestion of F, in amounts above the threshold of tolerance of the tissues, may be very depressing, and may materially influence mineral deposition in bones and teeth. Since, however, the teeth differ from bones, in that a complete rebuilding process is not possible for the teeth through subsequent months and years, growth defects of the enamel would be permanent."

Dr Price did not have the benefit of later research which has shown that fluorine is not an essential nutrient. - Editor.

Dean ignored Dr Price's classic study and continued to promote the addition of toxic fluoride chemicals to water supplies as a dental panacea relying on his flawed dental fluorosis studies to promote the scheme.

References:

1. to 5. See Part I

6. Price, Weston Andrew, M.S., D.D.S., F.A.C.D., *Nutrition and Physical Degeneration - A Comparison of Primitive and Modern Diets and Their Effects*. Including a supplement of 96 pages and a further 20 illustrations. Published by the Price-Pottenger Nutrition Foundation 1938. Numerous reprints, e.g. 1977; 527 p. inc. 134 illustrations & maps. Library of Congress RM 216.P785 1970 613.2 74-28658 MARC.

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- GPO Box 369, Sydney NSW 2001

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