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Dr. David Kennedy

Dear Dr. Kennedy, --

You have recently requested that I restate the substance of the evidence presented for the plaintiffs in historic trials in Pennsylvania, Illinois, and Texas in 1978-1982, leading to judicial findings in all three cases, based on at least a fair preponderance of the evidence, that water fluoridation causes cancer and other ailments in man. The underlying forensic evidence, political and legal history, court trials, and the judicial findings have been written up by me and associates in two published works: J. R. Graham and Pierre Morin, *Highlights in North American Litigation During the Twentieth Century on Artificial Fluoridation of Public Water Supplies*, 14 *Journal of Land Use and Environmental Law* 195-248 (Florida State University, 1999), which is internet accessible, and the chapter on forensic medicine in Pierre Morin, J. R. Graham, and Gilles Parent, *Fluoridation: Autopsy of a Scientific Error*, Éditions Berger, Austin, Qc., 2010, which translates into English and updates an earlier edition of the same work in French, published in 2005.

The key court papers, including transcripts, pleadings, motions, summations of evidence, exhibits, recorded data, judicial findings, and court orders, opinions, and decrees, together with other legal items, and related medico-scientific material in these three cases, and in related litigation, have been archived at the Crow Wing County Historical Society in Brainerd, Minnesota, and by the Geosciences Department at the University of Massachusetts Amherst, and I have much of this material in my own professional records.

It is noteworthy that the union of scientists at the national headquarters of the United States Environmental Protection Agency reviewed the evidence presented during the trials in Pennsylvania, Illinois, and Texas, and pertinent evidence later published. During the review process, I was contacted by the epidemiology section at the national headquarters of the USEPA, because, as a specialist in forensic science and medicine, I appeared for the plaintiffs, conducted direct and cross-examination of all expert witnesses, and wrote summations of evidence in all three cases. Upon my experience and background, I sent a detailed report of the forensic evidence to the epidemiology section at the national headquarters of USEPA. Copies of this report, including appendices, are in the archives in Minnesota and Massachusetts, and in my professional records. The union of scientists at the national headquarters of the USEPA (i. e., the National Treasury Employees Union, Chapter 280) concluded that the judicial findings were scientifically warranted

and correct, as is stated on June 29, 2000, in an internet-accessible report by Dr. J. W. Hirzy, executive vice president of the union, to a subcommittee of the United States Senate.

The union maintains a website which includes several additional reports in more recent years including material from affiliate unions representing professional staff in USEPA offices across the country, and this material is confirmatory of, and adjunctive to the report of Dr. Hirzy before the United States Senate on June 29, 2000.

My purpose here is to describe for you the evidence presented in the court trials in Pennsylvania, Illinois, and Texas, leading to judicial findings that water fluoridation causes cancer and other ailments in man. It is striking that three veteran trial judges in three different States each heard substantially the same forensic evidence, that each acted independently of the others, and that each reached the same basic conclusion. Each trial had unique features, characterized by differences in civil practice and procedure, not to mention somewhat different political cross-currents, but there was a large overlapping of substantive exhibits and testimony in all three cases. While the trial of each case was unavoidably complex, the main evidence in all three cases followed the same basic pattern:

Our initial evidence in court consisted of expert testimony on large laboratory studies done by Dr. Alfred Taylor, a biochemist at the University of Texas, and by him published in peer-reviewed journals in 1954 (about 600 mice, which is huge by contemporary standards, and important because mice, like man, are mammals) and 1963 (about 900 mice) showing unmistakably that fluoride in drinking water (introduced as NaF, thereby resembling fluoride as artificially introduced in public water supplies) at various concentrations, including 1.0 part per million (the usual target level in water fluoridation), induces cancer-related reactions in laboratory mice. These studies have been directly or indirectly confirmed many times in peer-reviewed articles which have been published in good scientific journals, and which show that fluoride is a carcinogen, a mutagen, and an enzyme inhibitor. We showed that the United States Public Health Service and the American Dental Association had concealed the work of Dr. Taylor, by claiming publicly, contrary to known facts, that Dr. Taylor did not do necessary reruns, that his work was not peer-reviewed, that he never published his work, and that he never observed or reported positive results. This evidence was introductory, but it was impossible for the judges not to notice that pertinent laboratory studies were concealed by promoters of water fluoridation. **The laboratory studies were reinforced by medical evidence to the effect that free fluoride ions in drinking water can be transported by blood to and absorbed in all parts of the human body including soft tissues, are highly reactive, and can cause cancer in all parts of the human body.**

Having laid this foundation of laboratory data and general medical knowledge, our main evidence in all three cases was a huge epidemiological survey conceived and executed by a number of workers under the direction of Dr. Dean Burk, one of the most famous and decorated cancer research scientists in the world during the 20th century. His career at the National Cancer Institute of the United States spanned 35 years. This epidemiological evidence is especially important, because it translates general concern into actual experience of human beings in their natural environment. The survey compared cancer death rates in two large groups of American central cities, both spread out in all parts of the United States (an aggregate population of about 18 million in 1960), including the same size category and density of urban populations in both groups, from 1940 through 1950 during which both groups did not introduce water fluoridation, and then after 1950 during which ten cities introduced and maintained water fluoridation in 1952-1968

(represented by available data for 1953-1968), and the other ten did not introduce water fluoridation in 1952-1968 (represented by available data for 1953-1968). Before 1950, the cancer death rates remained about the same in both groups for all years observed. After 1950, the cancer death rates the experimental cities introducing water fluoridation in 1952-1968 grew much more rapidly than for the control cities which did not introduce water fluoridation in 1952-1968. **The association shown between water fluoridation and human cancer was slightly more than 300 excess cancer deaths every year per million persons drinking fluoridated water after 15-20 years of exposure.** The 1940-1950 base line served as a control for all known and unknown variables, including socio-economic, environmental, nutritional, and demographic factors. This association between water fluoridation and human cancer works out to about 30,000 excess cancer deaths every year for about 100 million drinking fluoridated water at the time the three cases were tried. At the moment, substantially more Americans are drinking fluoridated water, so the annual casualty is substantially more now. The proper interpretation of the combined impact of laboratory, medical, and epidemiological evidence presented on our side of the case follows basic rules of inductive logic stated by William of Ockham, Sir Francis Bacon, and Sir Isaac Newton.

In these trials, the government of the United States maintained that the data gathered and organized under the direction of Dr. Burk should be adjusted for age, race, and sex. Among our twenty cities, the factors of sex and race proved, upon close examination, not to be important, but age certainly was and is important because cancer has always been an age-prone disease, and there were certain interesting age-related demographic changes within the populations studied between 1940 and 1970. Although we believed that the 1940-1950 base line was a sufficient control for age and all other variables, we agreed that no harm would be done by appropriate demographic adjustments, and that these adjustments might be useful as a precaution. Thus, **in all three cases, the primary point in controversy was not whether, but how and why demographic adjustments should be done.** Statisticians engaged by the government of the United States claimed that, using a textbook procedure in modern applied epidemiology (the indirect method, weighted averages, a national standard, and forty age-race-sex categories), adjusted cancer death rates in 1950-1970 actually grew faster in the control cities that did not introduce water fluoridation, than in the experimental cities which did, -- so they claimed at any rate. Our witnesses then came forth with several alternative age-race-sex adjustments, but they conceded for the sake of discussion that the textbook procedure used by the government justified serious attention. **We proceeded to show, in each of the three trials, that the government workers had left out all or nearly all available and pertinent data in their adjustment, but that, when omitted data are included by standard statistical methods, there remains an enormous association between water fluoridation and human cancer,** -- in light of what is now known, about 200 excess cancer deaths every year per million persons drinking fluoridated water after 15-20 years of exposure, which still translates into a stupefying increase in cancer mortality in the United States, year after year.

In the wake of these court trials, an eminent researcher at an international meeting in 1986 offered plausible evidence to support his contention that changes in population size might explain the huge association between water fluoridation and human cancer displayed by the epidemiological survey carried out under the direction of Dr. Burk. Because of our great respect for this scientist, we reviewed our data once again, and then adjusted for changes in population size among our twenty cities. We discovered that changes in population size are an approximate inverse index of population aging, because a declining population includes fewer people of child-bearing age, and a population growing larger has more people of child-bearing age. And we discovered, in any event,

that a proper adjustment of changes in population size leaves an enormous association between water fluoridation and human cancer, -- an association slightly larger than the association which remains after a correctly executed adjustment for age, or what amounts to the same thing, for age, race, and sex. Our expanded and revised adjustments for age, race, and sex and for changes in population size, drawn from census data and vital statistics of the United States, were published for the record in 1988, with the participation and approval of Dr. Burk, in the proceedings of the Pennsylvania Academy of Science.

Since the cases in Pennsylvania, Illinois, and Texas were tried, new evidence has been generated, including laboratory work showing that there is a statistically significant, dose-dependent trend in fluoride-induced bone cancer in male rats, and this laboratory work has been borne out in several epidemiological studies which show an association between water fluoridation and bone cancer in human males. These studies are important, because they are confirmatory of the laboratory work pioneered by Dr. Taylor and the epidemiological work of Dr. Burk and his associates, with respect to a particular kind of cancer, and include examination of specific cases in clinical setting.

Particularly disturbing to the union of scientists at the national headquarters of the USEPA is the recent emergence of laboratory studies which show that fluoride exposure induces neurological injury in rats, and epidemiological evidence suggesting that fluoride in water may reduce IQ in children. A new report published by the National Institute of Environmental Health Sciences in 2012 concludes, "Our results support the possibility of adverse effects of fluoride exposures on children's neurodevelopment." If this suggestion holds up to closer scrutiny in due course, the ramifications for water fluoridation as a disaster in public health administration are almost unthinkable. Yet, if we dump an industrial waste product in public water supplies, and the main ingredient has been identified as a carcinogen, mutagen, and enzyme inhibitor, we should not be surprised to see, as is now sketched out as a concrete possibility from information now available, that the same product is not only associated with large increases in cancer mortality as already established in judicial proceedings, but maybe also lower intelligence in man. With this unhappy note, I remain

Respectfully yours,

Courtesy copies to the Crow Wing County Historical Society, the University of Massachusetts Amherst c/o Professor Michael Dolan, and Dr. J. W. Hirzy