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ALLEGED ASSOCIATION OF FLUORIDES WITH CANCER

Statements are frequently made by opponents of fluoridation implying a causal relationship of fluorides with human cancer. These statements have been repeatedly refuted. A recent statement from the National Cancer Institute, National Institutes of Health, reaffirms such refutations and states:

Fluorine or fluoride salts are not carcinogenic.  
Water fluoridation applied for the purpose of  
dental caries prophylaxis poses no hazard relevant  
to cancer causation.

The full text of the statement by the National Cancer Institute is enclosed.

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Enclosure

## Summary Statement on Alleged Carcinogenesis of Fluorine

A recent article by Schatz and Schatz<sup>1</sup> resurrects an old issue which claims that fluoride accelerates the development of cancer. This alleged association between fluoride and tumor growth had its origin in several papers by Taylor and Taylor<sup>2</sup> during 1952-1965. Their findings have been completely controverted on all major points by other experiments using better techniques. A recent inquiry on the Schatz and Schatz article suggests that this issue is revived and again, in the interest of public health, it is necessary to set forth refutation to negate certain misleading concepts that attempt to associate environmental fluorine as a causation of human cancer. Although this early work of Taylor and Taylor relates to effect of fluoride on tumor growth, the implication has remained in the minds of many readers that fluorine was a carcinogen. Fluorine or fluoride salts are not carcinogenic. Water fluoridation applied for the purpose of dental caries prophylaxis poses no hazard relevant to cancer causation. The lines of evidence for this position are briefly cited below.

### (1) Laboratory Findings

- a. Extensive toxicity studies of fluorine and its compounds under noted cancer researchers using experimental animals such as the mouse, rat, guinea pig, hamster, rabbit and dog failed to show that there was any cancer causing or cancer accelerating effects.
- b. Sodium fluoride does not accelerate the growth of an established Walker Rat Sarcoma in experimental animals.<sup>3</sup> This test is a standard test tumor widely used in biological testing of growth stimulating or inhibiting compounds.
- c. Sodium fluoride appears to actually inhibit the development of spontaneous mammary carcinoma in mice.<sup>4</sup>
- d. Fluoride ion in environmental media, such as water, is at a level insufficient to alter enzyme action involved in tumor growth.<sup>5</sup>
- e. Fluoridated waters would have a concentration of fluoride ion which is a small fraction of that

occurring in foods naturally and experimental laboratory diets and the latter diets have not induced cancer in mice or rats in many experiments.<sup>6,7</sup>

- f. Amount of fluoride ion in water claimed by Taylor and Taylor to enhance tumor growth is miniscule ( $5 \times 10^{-6}$  milligrams) compared to fluoride content of normal mouse plasma, thus it should be incapable of producing any fluctuation in plasma concentration beyond normal variation.<sup>5</sup>

## (2) Epidemiologic or Human Population Studies

- a. Studies on population groups in England and Wales, where there were water supplies of low fluoride content and areas where fluoride levels at 1.0 ppm and above, failed to show any association between fluoride level and stomach cancer mortality.<sup>8</sup>
- b. U.S. Public Health Service comprehensive studies on cities with populations over 10,000 whose water contained over 0.7 ppm of fluoride on one hand and less than 0.2 ppm of fluoride for other cities failed to show any significant difference between age adjusted death rates from cancer. Similar studies in Grand Rapids, Michigan prior to fluoridation in 1944 and after fluoridation from 1945 to 1952 failed to show any appreciable variation or increase in death rate from cancer.<sup>9</sup>
- c. A study in 13 Texas cities divided into 3 groups according to fluoride content of drinking water showed that the rate for breast cancer was lower in cities with high fluoride content than in cities with low fluoride content.<sup>10</sup>
- d. Epidemiologic studies by National Cancer Institute on trace metals in water including fluorine showed that there was a negative correlation between fluorine in the environment and human bowel cancer.
- e. The incidence of gastric cancer in Japan is on the downward trend which would tend to discount the possibility that environmental increases in fluoride from fertilizer is associated with gastric cancer.

- f. Claims that fermented rice and soybean with positive fluorine levels being associated with gastric cancer may indeed reflect a spurious association since many environmental contaminants can singly or collectively play a role in the etiology of the disease process. Direct observations on mortality experience of population groups exposed to a suspect agent, especially where there is a clearly delineated or heavy exposure (i.e., occupational exposure) is more satisfactory than studies based on correlations on geographical aggregates with reference to disease. This is especially relevant to low level exposure.
- g. The observation made in Birmingham, England, allegedly associating increase in leukemia with increased levels of fluoride in water is singular. This type of cancer of low incidence in such a city of limited population introduces a problem of making a valid association. This observation is probably anecdotal. One should have mortality experiences or disease incidence from many cities of sufficient population size.
- h. Finally, the Council of the Society of Toxicology, Inc., in 1969 issued a statement on the safety of water fluoridation. They stated that "under controlled conditions as recommended by qualified public health authorities, the Society of Toxicology finds water fluoridation to be a safe measure."11

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## References

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