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The Surgeon General of the
Public Health Service
Washington DC 20201

July 30, 1982

Mr. John W. Hernandez, Jr.
Deputy Administrator
U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Hernandez:

This letter is in response to your request that the Public Health Service (PHS) review the scientific aspects of the epidemiological studies related to the effects of fluoride ingested through drinking water and provide advice on the validity and significance of the findings relative to dental fluorosis.

At the direction of the Chief Dental Officer, PHS, an internal ad hoc committee was established to accomplish this review. The findings of this committee are:

1. An optimum concentration of fluoride in drinking water is best defined as that concentration which provides the highest level of protection against dental caries consistent with a minimal prevalence of clinically observable dental fluorosis.
2. The traditional method that takes into account the effect of air temperature on water consumption for estimating optimum fluoride concentrations remains scientifically valid. Standards established by that method specify optimum concentrations of fluoride ranging from 0.7 to 1.2 p.p.m. for various geographic areas within the U.S. depending on the annual average of the maximum daily air temperatures.
3. It has been well documented that persons born and reared in communities with optimum concentrations of fluoride in their drinking water supplies have on an average 50 to 65 percent less dental caries than persons reared in communities with lower fluoride levels in their drinking water.
4. No sound evidence exists which shows that drinking water with the various concentrations of fluoride found naturally in public water supplies in the U.S. has any adverse effect on general health.
5. No sound evidence exists which shows that drinking water with the various concentrations of fluoride found naturally in public water supplies in the U.S. has any adverse effect on dental health as measured by loss of function and tooth mortality.
6. Several studies have reported that greater caries preventive benefits are realized by consuming water with various higher than optimum concentrations of fluoride. Some data suggests that children with severe fluorosis have less protection against dental caries than children with lesser degrees of fluorosis.

However, it is not clear if protection remains higher among children with severe fluorosis than among children consuming optimally fluoridated water.

7. As the natural fluoride concentration in water supplies increases beyond the recommended optimum, an increasing percentage of individuals exhibit dental fluorosis which may range from scarcely noticeable color change to confluent pitting of the enamel surface. Whether and to what extent these changes are considered cosmetically objectionable is subjective, varying by individual and community.
8. Overall, data suggest that at fluoride concentrations in drinking water as great as three times optimum, dental fluorosis is largely limited to color changes. At the fluoride concentration of four times optimum, some data suggest a marked increase in the prevalence of severe fluorosis, whereas other data indicate that the prevalence of severe fluorosis continues to be low. Because of the equivocal nature of the data at four times optimum, the dose-response curve for severe fluorosis between three and four times the optimum has not been clearly defined.
9. To minimize the occurrence of undesirable cosmetic effects, it is most prudent to maintain the upper limit of fluoride in drinking water at two times the recommended optimum concentration.

I concur with the above findings. Also, as one concerned about the total well-being of the individual and one dedicated in helping people avoid impediments to their reaching their maximum potential in society, I cannot condone the use of public water supplies that may cause undesirable cosmetic effects to teeth, just as I cannot condone the use of water supplies below the optimum concentration because of a diminished protection against dental caries. Therefore, I encourage communities having water supplies with fluoride concentrations of over two times optimum to provide children up to age nine with water of optimum fluoride concentration to minimize the risk of their developing esthetically objectionable dental fluorosis. Furthermore, I encourage the dental profession in communities which do not enjoy the benefits of an optimally fluoridated drinking water supply to exercise effective leadership in bringing the concentration to within an optimum level.

I commend the U.S. Environmental Protection Agency for its support of research on fluorides in drinking water and encourage continued study. I shall promote within the Public Health Service continued scientific advancement of knowledge about the effects of fluoride on health.

Thank you for the opportunity to provide this information for your consideration and guidance for future policy.

Sincerely,

C. Everett Koop
C. Everett Koop, M.D.
Surgeon General