



TR-832-5

DRINKING WATER
CRITERIA DOCUMENT ON FLUORIDE

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by

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for

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The EPA, with the assistance of the National Institute of Mental Health (NIMH), convened an ad hoc Review Panel of behavioral scientists to investigate the potential psychological and/or behavioral effects associated with dental fluorosis. This ad hoc Review Panel reviewed background information and conducted a meeting on October 31, 1984 in Bethesda, MD to discuss this issue and determine if consensus opinions could be formulated. The conclusions and recommendations of the Review Panel's deliberations were summarized in a November 17, 1984 report (Kleck 1984) and are repeated below:

"It is concluded that individuals who have suffered impaired dental appearance as the result of moderate to severe (dental) fluorosis are probably at increased risk for psychological and behavioral problems or difficulties. Since this conclusion is based on extrapolations from research on the effects of physical appearance characteristics other than dental fluorosis, it is suggested that investigations be supported to directly assess the social, emotional, and behavioral effects of fluoride-induced cosmetic defects. Finally, the Panel recommends research be done on the further development of techniques for the amelioration or removal of the unaesthetic appearance effects associated with some levels of dental fluorosis."

Skeletal changes in bones of cattle ingesting 12 (normal), 27, 49 or 93 ppm fluoride on a total dry matter basis have been described by Shupe et al. (1963). Fluoride concentrations in dry, fat-free rib biopsy samples increased with increasing time of exposure for all dose groups. After 7.3 years (2,663 days) the fluoride concentration was approximately 900 ppm in animals on the normal diet. At this same time, the rib fluoride concentrations were approximately 2,500, 5,500 and 8,200 for the cattle receiving 27, 49 and 93 ppm fluoride in the ration, respectively. The rate of increase with time was greatest in those cattle administered 93 ppm fluoride.