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## Abstract

[Back to Hit List](#)**Grant Number:** 1R01ES006000-01**PI Name:** DOUGLASS, CHESTER W.**PI Email:** [chester\\_douglass@hsdm.harvard.edu](mailto:chester_douglass@hsdm.harvard.edu)**PI Title:****Project Title:** FLUORIDE EXPOSURE AND OSTEOSARCOMA

**Abstract:** The National Toxicology Program (NTP) found "equivocal evidence" of a link between *fluoride* ingestion and the formation of *osteosarcoma* in a small percentage of male rats that received high doses of fluoridated water. The HHS Committee to Coordinate Environmental Health and Related Programs (CCEHRP) reported that males under 20 (the gender and age group with the highest incidence) living in the 12 fluoridated counties had a 79 percent increase in osteosarcomas while a similar age/gender group in the 21 non-fluoridated counties experienced a 4 percent decrease in the *osteosarcoma* rate between 1973-80 to 1981-1987 in a correlational study. In direct response to a CCEHRP research recommendation, the proposed study will assess the risk for *osteosarcoma* from the ingestion of fluoridated water. A nation-wide hospital based case-control study will be conducted on 320 prevalent cases and 320 incident cases over a 3 1/2 year period. A ratio of 1:2 cases to controls matched by age (+/- 3 years), gender, and state of residence will be recruited from the orthopedic departments from eight tertiary care centers distributed throughout the nation. A telephone interview will obtain the complete residential *fluoride* histories and exposure to *fluoride* from oral hygiene practices. Additionally, *fluoride* content of the bone and toenails from incident cases will be compared to matched controls. Solid-state NMR techniques will assess the level of *fluoride* in the bone. Neutron activation for elemental analysis will assess the level of *fluoride* in toe nail clippings as a cumulative measure of *fluoride* intake. We will test the primary hypothesis that higher *fluoride* exposure is associated with the risk of *osteosarcoma*. An incorrect inference implicating systemic *fluoride* carcinogenicity and its removal from our water systems under the EPA Delaney clause would have significant oral health consequences for most Americans, particularly those who cannot afford to pay for increasingly expensive restorative dental care.

**Thesaurus Terms:**

chemical related neoplasm /cancer, fluorine, neoplasm /cancer epidemiology, osteogenic sarcoma

bone, cancer risk, nail, topical *fluoride* therapy, water supply

activation analysis, data collection, human clinical subject, interview, nuclear magnetic resonance spectroscopy, questionnaire

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