NEIGHBORHOOD FLUOROSIS IN THE U.S.A.

In 1946 Margaret M. Murray and Dagmar C. Wilson coined the term "neighborhood" fluorosis for a disease which was precipitated by fluoride emissions from the ironstone industry in South Lincolnshire, England. Fluoride had polluted the "neighborhood" and had caused chronic poisoning in nine individuals of a farmer's household. Since that time, no further reports have appeared in the medical literature. However, at the trial before the Oregon U.S.A. District Court, in the case of Paul Martin et al. vs Reynolds Metals Company, August 25, 1955, a thorough description of neighborhood fluorosis was revealed. Since these data are of considerable interest to scientists, particularly to physicians, some are herewith reviewed.

Mr. Martin's 1500-acre ranch situated in Multnomah County, Oregon, was triangular in shape. On one side its border was the Columbia River. On another, the Sandez River separated the ranch from the aluminum factory by 6,000 feet. During the war years 1942-1945 four pot-lines of the factory were operated by the Aluminum Co. of America. Subsequently, the factory was leased to Reynolds Metals Co. The latter began operations in 1946, the year the Martins moved onto their property.

Shortly thereafter many of Martin's 700 head of cattle began to sicken and die. Buckwheat leaves within two miles of the plant contained 125 to 175 ppm of fluoride. Windows on the farm became etched, a condition usually encountered when 30 to 40 ppb (parts per billion) of F contaminate the air. Ordinarily tests showed levels of 1 to 12 ppb of F in the air.

Within 3 to 4 months after moving to the ranch, the farmer, Paul Martin, his wife Verla and daughter Paula, contracted an unusual disease. Two consultants, Dr. R.B. Capps of St. Luke's Hospital, Chicago, and Dr. Donald Hunter of University of London, England, described the disease as fluorosis.

Mr. Martin exhibited four groups of symptoms. They involved the skeletal and respiratory systems, the gastro-intestinal and urinary tracts. Pains in the lower spine radiated into the legs. Spinal movements were restricted. He was unable to bend down. Exertion of any kind aggravated the pains. The skeletal X-rays were negative. He developed shortness of breath associated with cough and expectoration, especially following exertion. The gastro-intestinal symptoms were heartburn, nausea, diarrhea and bloating of the abdomen. He had polyuria and nocturia and what was termed toxic hepatitis. A state of anxiety, the physicians felt, was superimposed upon the organic disease.

The manifestations in his wife's case were identical, except that her liver function tests were normal whereas the kidney function was impaired. The daughter developed dental fluorosis (mottled teeth). Her gums were unusually dark in color. She had gingivitis for which the consultant dentist had no explanation. She also had considerable pain and crepitation in the ankles. Her case was diagnosed as fluorosis and toxic hepatitis in conjunction with hypothyroidism and gastric anacidity. The physicians related the last two conditions to fluoride. The girl suffered episodes of acute abdominal attacks which her physicians were unable to diagnose. At first they suspected appendicitis but soon realized that some other illness was causing the symptoms. The 24-hour urine specimens in the daughter and father revealed levels of only 0.96 ppm and 1.58 ppm fluoride respectively.

The jury and the appellate court, after hearing extensive evidence for and against the plaintiffs, established chronic fluorosis in all three persons. Mr. Martin died in 1964. His ranch was sold to Reynolds Metals Co. August 7, 1968.