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ASBESTOS FEEDING STUDY FINDS NO GASTROINTESTINAL CANCER IN TEST ANIMALS

A lifetime study¹ of rats fed asbestos, taconite tailings and Lake Superior water recently concluded, "Autopsy studies revealed no significant increase in the incidence of malignant tumors in any experimental group compared with that in the control group." The study, initiated in 1973, was conducted by physicians at St. Luke's Hospital, Duluth, Minnesota, the University of Illinois' Abraham Lincoln School of Medicine and the University of Minnesota School of Medicine.

The objective of the research was to evaluate the carcinogenicity of ingested mineral fibers in various forms. In discussing the study's rationale, the authors acknowledge how little was known in 1973 about the biological effects of ingested asbestos. They point out that although workers inhaling asbestos dust "probably suffer some gastrointestinal exposure by swallowing mucus containing asbestos fibers ... there was no assurance that this was the equivalent to direct ingestion of amphibole (asbestos)-contaminated water."

The test animals, 190 Sprague-Dawley rats, were divided into seven exposure groups:

- (1) Control (no exposure)
- (2) Unfiltered Duluth tap water (average fiber content 100 million fibers per liter)
- (3) Lake Superior water sediment (average fiber content 5,000 million fibers per liter)
- (4) Taconite plant tailings (average fiber content 100,000 million fibers per liter)

- (5) Low dose asbestos (chrysotile and amosite; 20 milligrams per rat per day; approximately 5,460 million fibers per liter)
- (6) High dose asbestos (300 milligrams amosite per rat per day; approximately 78,000 million fibers per liter)
- (7) Diatomaceous earth (20 milligrams per rat per day)

Complete gross and microscopic autopsies were performed on 187 of the 190 test and control animals. The entire gastrointestinal tract of each animal was inspected and transilluminated; tissue specimens were removed from representative pre-selected sites and from all abnormal areas. The investigators concluded:

The most significant finding in our study was the total absence of gastrointestinal cancer in animals exposed to the test materials. Any direct carcinogenic action of ingested asbestos fibers should have its primary impact on the gastrointestinal mucosa.

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Under the conditions of our study, ingested asbestos, taconite tailings, unfiltered Duluth (Lake Superior) tap water, Lake Superior reservoir sediment and diatomaceous earth had no demonstrable carcinogenic effect on the gastrointestinal tract or on other body tissues of the rat.

REFERENCES

1. Hilding, A.C., Hilding, D.A., Larson, D.M., and Aufderhiede, A.C., "Biological Effects of Ingested Amosite Asbestos, Taconite Tailings, Diatomaceous Earth and Lake Superior Water in Rats," Archives of Environmental Health 36, 298-303 (November-December) 1981.