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Biological Effects of Ingested Asbestos

Status Report January 22, 1981

Introduction

The NIEHS is conducting a series of studies on the effects of ingested asbestos. These studies are part of the NIEHS commitment that is directed by the recently established National Toxicology Program. The Environmental Protection Agency has contributed approximately 10% of the total funding. A summary of the evolution of the study is to be found in Appendix A. A paper, given at a Workshop on Asbestos, Gaithersburg, Maryland, July 1977, detailing the studies' design and implementation is attached (Appendix B).

Current Status

Test Materials - Two samples of chrysotile, and single samples of amosite and crocidolite asbestos plus a tremolite material are being tested. A repository of these materials was established and has also served as a source for other scientific studies on asbestos.

Each material has been extensively characterized as to physical and chemical properties. The fiber size characterization performed by the Illinois Institute of Technology Research Institute (IITRI), Chicago, Illinois, has been completed and a final report received. The chemical and physical property characterization performed by the U. S. Bureau of Mines is also completed.

Hamster Studies

Three asbestos materials are being studied at IIT Research Institute, Chicago, IL. The lifetime exposure phase of these experiments has been completed. There was no indication of major differences in the mortality rate between the hamsters receiving the asbestos diet or the control diet. Histopathologic examination of tissues from female hamsters has been completed. The contractor has reported that a preliminary analysis of the hamster data indicates that no carcinogenic or cocarcinogenic effect was observed. A standard independent quality review of the pathology results has been completed for the female hamster. A similar review of the male hamsters is in progress and is expected to be completed in March 1981. Analyses of the verified data and preparation of the draft report is in progress. The report is expected to be completed and submitted to the NTP Board of Scientific Counselors' Technical Report Subcommittee for independent public peer review in May 1981.

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Rat Studies

Five test materials are being studied in this species at the Hazleton Laboratories, Vienna, Virginia. In addition, a subset of two studies includes neonatal as well as lifetime oral exposure to asbestos. The lifetime exposure phase of the study has been completed. Although data has not yet been statistically analyzed, it appears that longevity was not affected by exposure to the various types of fibers, although the known carcinogen (DMH) did significantly shorten lifespan. The histopathologic phase of the study is in progress and is projected to be completed in October 1981--there are a total of 5,158 rats to be examined. The histopathologic evaluation is to be completed by group and then subjected to pathology quality review. Sequential issuance of final reports by asbestiform type is being considered with the first reports projected to be available for public peer review in December 1981.

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