U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 78-112-535

BEECH AIRCRAFT CORPORATION
BOULDER, COLORADO

NOVEMBER 1978

I. TOXICITY DETERMINATION

A health hazard evaluation was conducted by the National Institute for Occupational Safety and Health (NIOSH) at Beech Aircraft Corporation in Boulder, Colorado, on August 23, 1978. Bulk insulation samples from all areas of this facility were analyzed for asbestos content. There was no asbestos in any of these samples. All areas where bulk samples were taken appeared to be clean and there was no visible air-borne dust. Based on this information, a health hazard did not exist at the time of this evaluation.

II. DISTRIBUTION AND AVAILABILITY

Copies of this determination report are currently available upon request from NIOSH, Division of Technical Services, Information Resources and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days the report will be available through the National Technical Information Service (NTIS), Springfield, Virginia. Information regarding its availability through NTIS can be obtained from NIOSH, Publications Office, at the Cincinnati address.

Copies of this report have been sent to:

1. Authorized representative of employees
2. Beech Aircraft Corporation
3. U.S. Department of Labor/OSHA - Region VIII
4. NIOSH - Region VIII.

For the purpose of informing 20 affected workers, a copy of this report shall be posted in a prominent place accessible to the employees for a period of 30 calendar days.

III. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

NIOSH received such a request from an employee representative at Beech Aircraft in Boulder, Colorado, to evaluate sprayed on insulation for asbestos content.

IV. HEALTH HAZARD EVALUATION

A. Process Evaluated

The Beech Aircraft Corporation in Boulder, Colorado, produces aircraft sub-assemblies, target missiles, and other aerospace components.

The buildings at this facility are insulated with a sprayed on type insulation. Bulk pieces of the insulation were obtained in three different test cell buildings, in a building referred to as south pad, and in the maintenance building. Breathing zone air samples were not taken at this time due to:

1. There was no visible air-borne dust,
2. The facility was very clean, and
3. Analyses of the insulation to see if asbestos was present before taking air samples.

B. Evaluation Design and Methods

Bulk samples were secured from the walls and rafters at five different locations. These samples were visually analyzed for percentage asbestos utilizing phase contrast microscopy, with polarizing and dispersion staining techniques.

C. Criteria for Assessing Workroom Concentrations of Air Contaminants

Three sources of criteria generally used to assess workroom concentrations of air contaminants are: (1) NIOSH criteria for recommended standards; (2) recommended Threshold Limit Values (TLVs) and their supporting documentation as set forth by the

American Conference of Governmental Industrail Hygienists (ACGIH), 1978; and (3) Occupational Safety and Health Administration (OSHA) standards (29 CFR 2920), January 1976. NIOSH criteria and ACGIH TLVs represent the most recent and relevant recommendations and are given prominence in this evaluation.

	NIOSH	TLV	OSHA
Asbestos[1]	0.1 fibers/cc[2] 0.5 fibers/cc[2]	2 fibers/cc[3]	2 fibers/cc

[1] fibers per cubic centimeter of air, greater than 5 microns in length.
[2] peak concentration for 15 minute period.
[3] notice of intended changes 1978 TLVs.

Occupational health standards are established at levels designed to protect individuals occupationally exposed to toxic substances on an 8-hour per day, 40-hour per week basis over a normal working lifetime.

D. Toxicology

Asbestos - Available studies provide conclusive evidence that exposure to asbestos fibers causes cancer and asbestosis in man. Lung cancers and asbestosis have occurred following exposure to chrysotile, crocidolite, amosite, and anthophyllite. Mesotheliomas, lung and gastrointestinal cancers have been shown to be excessive in occupationally exposed persons, while mesotheliomas have developed also in individuals living in the neighborhood of asbestos factories and near crocidolite deposits, and in persons living with asbestos workers. Asbestosis has been identified among persons living near anthophyllite deposits.

Likewise, all commericial forms of asbestos are carcinogenic in rats, producing lung carcinomas and mesotheliomas following their inhalation, and mesotheliomas after intrapleural or ip injection. Mesotheliomas and lung cancers were induced following even 1 day's exposure by inhalation.

The size and shape of the fibers are important factors; fibers less than 0.5 μm in diameter are most active in producing tumors. Other fibers of a similar size, including glass fibers can also produce mesotheliomas following intrapleural or ip injection.

There are data that show that the lower the exposure, the lower the risk of developing cancer. Excessive cancer risks have been demonstrated at all fiber concentrations studied to date.

Evaluation of all available human data provides no evidence for a "safe" level of asbestos exposure. (reference 1)

E. Results

Bulk insultation samples were taken in three different test cell buildings, in a building referred to as south pad, and in the maintenance building. These samples were analyzed for asbestos. There was no asbestos in any of the samples.

F. Conclusions

There was no health hazard at the time of this survey. It does not appear that there would ever be a hazard due to the sprayed on insulation.

V. RECOMMENDATION

When the sprayed on insulation comes loose from walls and ceilings, it should be removed.

VI. REFERENCES

1. NIOSH Revised Recommended Asbestos Standard. NIOSH 77-169, December 1976.

VII. AUTHORSHIP AND ACKNOWLEDGMENTS

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