FILE NAME: Brakes (BRK)

DATE: 1985

DOC#: BRK169

DOCUMENT DESCRIPTION: EPA Memo RE Asbestos Exposure - Brakes and Ambient

15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

85 JAN 31 PM 12:05

OCT 17 1985

OFFICE OF
POLICY, PLANNING AND EVALUATION

MEMORANDUM

SUBJECT: Asbestos Exposure - Brakes and Ambient

FROM: Steve Weil, Chief
Chemical Review and Analysis Branch

Lynn Delpire
Exposure Assessment Branch

TO: Amy Moll
Regulatory Impacts Branch

After careful examination of the data on worker exposure to asbestos dust from brake relining and maintenance operations and on ambient exposure to asbestos, we have decided that the best figures are 0.04 fibers/cc for brakes and 0.00007 fibers/cc for ambient exposure. Our reasoning is explained below.

Brake Shops

There is a significant amount of monitoring data available on worker exposure to asbestos in shops doing brake maintenance. This data shows various levels of asbestos exposure depending on the operation involved (e.g., blowing dust from brakes), the distance from the actual brake work and the amount of brake work being done in the shop. The numbers ranged from 29.8 f/cc for a peak sample taken during blow out of dust from brake linings (Rohl et al, 1976) (a high number even for this operation) to low numbers such as .002 f/cc (fibers greater than 5 micrometers in length) for a twa for complete service of front disk and rear drum brakes and .001 f/cc six feet outside of the work bay (Roberts, 1980, Allied Brake Shop).

We have decided that the number chosen by the contractor, 0.04 f/cc, is a reasonable estimate of the exposure of workers in shops doing brake work. While the number may be low for workers during the time actually engaged in brake repair and maintenance, we think that it relatively accurately reflects the exposure to the population of all mechanics and workers in repair shops.

A more accurate method of determination of such exposure would involve determination of exposures of workers during different phases of actual brake work, and calculation of their exposure, and then addition of the rest of the exposed work force at levels that approximate background levels in the shop. Rough calculations show that this yields approximately the same average exposure.

Ambient Exposure to Asbestos

The purpose of calculating ambient exposure to asbestos is to include benefits not captured by the models. Thus, the ambient exposure calculation should be based on exposure data that does not include either exposure to friable asbestos in buildings (already banned) or asbestos floor tiles (a separate calculation).

The calculation by the NAS (pg. 219, in Asbestiform Fibers: Nonoccupational Health Risks) is not valid for our purposes as it assumes a certain contribution to ambient from exposure to friable asbestos. Further, the calculation is flawed because the exposure measurement for uncontaminated indoor environments came from buildings with friable asbestos in other rooms. The resulting cross contamination yields figures that are not truly representative of uncontaminated indoor environments.

The NAS figure for outdoor ambient exposure, 0.00007 f/cc, seems to be a reasonable figure. While this exposure undoubtedly has some component deriving from friable asbestos use in buildings and so on, use of this figure will minimize the double counting problem.

c.c. Debi Dobkowski
Al Jennings
Rick Tinsworth