Internal
Memorandum

Bendix Research Laboratories

Date September 21, 1976 Letter No.

Southfield, Michigan

To D. Bitondo

From M. G. Jacko

Subject Comments on Paper: Asbestos Exposure during Brake Lining Maintenance and Repair.

The paper by A. N. Rohl, A. M. Langer, M. S. Wolf, and I. Weisman, "Asbestos Exposure during Brake Lining Maintenance and Repair," Environmental Research, 12, 110-128 (1976) was read and the following comments are applicable:

1. The BRL Program on brake emissions performed for the EPA during 1971-1973 showed the range of asbestos in brake debris to be 0.02 to 1.42% as measured by a combination of optical and transmission electron microscopy, much lower than the Rohl et. al. reported range of 2-15%. The BRL results were confirmed by an independent EPA contract to Batelle Research Laboratories (Table 1) who used a sample preparation similar to that used by Rohl et. al. in combination with transmission electron microscopy. Additional analyses by Johns-Manville gave even lower asbestos analyses.

2. In their sample preparation technique (described in lines 2-3 on the top of page 114), they claim they do not alter the particle size distribution. This is questionable. Johns-Manville agreed that their method changed the particle size distribution.

3. Rohl et. al. used X-ray diffraction (XRD) which identifies and quantifies even bound fibers (in clumps) which are not harmful as free asbestos fibers. Figure 7 shows some of the more open particles. Figure 8 is very untypical as it is rare to see adjacent fibrils other than parallel fibers from the occasional bundle.

4. The Mount Sinai School of Medicine has been known to exist on contracts for asbestos studies and has been known to be sensational or exagerate the harmful effects of asbestos. By their own admission, they state that their measurement of asbestos with XRD gave higher data than visible fibers seen by electron microscopy (lines 6-7 on page 126).

5. The samples analyzed by Rohl et.al. were from sump and surfaces (definitions used by Jacko and DuCharme) which were artificially blown into the air and caught on filters. It is possible that their process segregated the lights from the heavies and there may have been a concentration of "fluffy" particles which contained more asbestos as shown in their Figure 7. The Jacko and DuCharme data showed that the airborne samples collected on the vehicle usually contained less asbestos than the sump and surfaces samples.

6. Although Rohl et. al. refer to the work by Jacko and DuCharme and make comparisons to their work, these comparisons are questionable because of wide differences in techniques. One may also question the Rohl et. al. interpretations of the results by Jacko and DuCharme who used vehicle tests, and not dynamometer tests as misinterpreted or misread by all of them (8th line from bottom on page 115).

7.

8. The impact on Bendix business is difficult to assess. There should be no additional affect on Bendix other than that already expected in friction material manufacturing. There will always be other pollution problems. Automotive exhaust contains combinations of iron-oxide and carcinogenic hydrocarbons and roads can release aggregate and asphaltic residues. Rural roads covered with oil with very little visible dust may be more harmful than the unpaved dirt road. And so on. Asbestos has already been legislated. Other legislation on other materials would be too burdensome. This writer expects only minor legislation in the form of improved work practices for garages doing brake repair.

M. G. Jacko

MGJ/vp

cc: S. K. Rhee