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Asbestos Brake and Clutch Data

bcc

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California Air Resources Board
Haagen-Smit Laboratory
9528 Telstar Avenue
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Subject: CARB Asbestos Information Request
Asbestos Brake and Clutch Data

Dear Mr. Drachand:

Transmitted herewith is the Ford Motor Company (Ford) response to the information request by the California Air Resources Board (CARB) concerning asbestos use in automotive friction materials.

Many studies have shown that the output of asbestos to the atmosphere from motor vehicles may be insignificant. It has been reported that, during the braking process, from 99.7% to over 99.9% of the asbestos breaks down thermally to nonfibrous material.^{1/} The remaining fraction has questionable health significance.^{2/} CARB's own "Report to the Scientific Review Panel on Asbestos" estimates that less than 0.17 percent of all the asbestos emissions in California in 1984 could be attributed to vehicle braking. Nonetheless, Ford has an ongoing program, begun in 1979, to use where feasible non-asbestos materials in place of asbestos materials in its new vehicles.

A great deal of the information which CARB requested has proven difficult for us to find. Ford does not manufacture brakes. We purchase all of our

^{1/} Jacko, M., DuCharme, R., Somers, J., "Brakes and Clutch Emissions Generated During Vehicle Operation," Society of Automotive Engineers, 18 (May 14 - 18, 1973).

William, R., and Muhlbaier, J., Asbestos Brake Emissions, Environmental Research, 29, 70 - 82 (1982).

^{2/} Wright, G., and Kuachner, Proceedings of the 4th International Symposium on Inhaled Particles and Vapors, Brit. Ind. Hyg. Sec. (1975).

Gross, P., Arch Environmental Health, 29, 115 (1974).

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brake systems and parts, both for the assembly of new vehicles and for the aftermarket, from outside manufacturers and suppliers. All of our friction components -- be they pads or linings -- are manufactured by others. Thus, compiling the requested information has required extensive effort. Our product engineering offices provided data which were then correlated with applicable sales volumes to produce the attached data summary, Tables 1 - 3. As was discussed in a telephone conversation on March 25, 1987, with James Lyons of CARB, not all of the requested information was found.

The enclosed tables do not fully present the steps Ford has taken since 1979 to remove asbestos materials from its vehicles as new models have been introduced. It is only through extensive behind-the-scenes effort that a new friction product (and thus a new brake system) can be introduced to a vehicle line. Such efforts are already paying dividends in the ongoing removal of asbestos from our products. As the tables show, Ford's light and heavy truck brakes are well on the way towards becoming asbestos free. A parallel effort in passenger cars has taken place and the next three model years are expected to show dramatic progress towards completely asbestos-free passenger cars. Ford has undertaken an internal initiative whose goal is to eliminate asbestos containing materials from all systems in all product lines by the early 1990's. At the present time, the asbestos removal program is proceeding on schedule.

Although current car and truck brake systems are being designed without asbestos materials to the extent now feasible, past models continue to require for replacement those asbestos parts which they were designed to use. Asbestos containing pads and linings have different performance characteristics from the pads and linings that do not contain asbestos.^{3/} For that reason, one cannot simply use a non-asbestos substitute brake lining in conjunction with a drum that was designed for an asbestos-containing friction material. Likewise, a disc brake that was designed for a semi-metallic friction material will not perform satisfactorily if an asbestos-containing pad is substituted. A whole host of safety, noise, durability, and other problems may occur if a friction material is introduced into a system which was not designed to employ it. Our people and our suppliers have done and continue to do a great deal of research and development on this subject. Enclosed are comments submitted to the U.S. Environmental Protection Agency on the problems associated with replacing asbestos in aftermarket brakes and brake components.

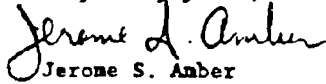
^{3/} Flick, M. A., Radlinski, R. W., Kirkbride, R. L., The Effect of Aftermarket Linings on Braking Efficiency, Society of Automotive Engineers, (1987).

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If you have questions or require additional information concerning this submittal you may contact me or Mr. Alan R. Amberg of this office on (313) 322 - 3827.

Very truly yours,



Jerome S. Amber

Principal Staff Engineer

Stationary Source Environmental Control Office
313/322-4646

cc

James Lyons, CARB

Motor Vehicle Planning Section

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