

General Motors Corporation
Statement on
EPA Proposed Asbestos Mining and Import Restrictions and
Manufacturing, Importation and Processing Prohibitions
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Statement for Public Hearing on Asbestos Ban by
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I welcome the opportunity to comment on EPA's analysis of the health effects of asbestos as it relates to General Motors use of asbestos-containing friction materials.

The exposure of workers to excessive concentrations of airborne asbestos has long been recognized as an occupational hazard of industrial health significance. Where excessive exposures occur, it is generally recognized that inhalation of asbestos dust causes chronic inflammation of lung tissue and pleural membranes, as well as cancers. Ambient atmospheric levels of asbestos are not a recognized hazard to the public.

All types of asbestos are known to cause the inflammatory changes in the lungs and pleura and lung cancer. However, there is anecdotal, experimental and epidemiological evidence that there are differences in the potential of the different asbestos types to produce disease. Crocidolite is reported to have the greatest potential; amosite in between; and chrysotile being the least.

Of particular interest, and a reason behind the introduction of new regulations, is the relationship between the inhalation of asbestos and cancer, especially mesothelioma. The association between mesothelioma and asbestos first was demonstrated by Wagner et al in 1960. Mesotheliomas are rare, usually rapid, fatal cancers that originate from the surfaces lining the chest or abdominal cavity. From 1960 through 1975, 4,539 mesotheliomas were reported worldwide. Where asbestos exposures were involved, the vast majority of these cancers were in people exposed to crocidolite alone or in combination with other types of asbestos. Importantly, crocidolite, is not a component of brake lining materials.

Furthermore, not all mesotheliomas result from asbestos exposure. According to the American Conference of Governmental Industrial Hygienists, there is a background of spontaneously occurring mesotheliomas that has been estimated to be about ten (10) for males per million people and four (4) for females aged 45 years and older per million people. It is not uncommon for various epidemiologic studies to indicate that 15% or more of the reported mesothelioma cases have no history of ever having been exposed to asbestos.

Whether there is a dose response relationship associated with asbestos has been answered affirmatively by a number of epidemiologic studies. It is clear cut with regard to asbestosis and lung cancer. It is less well established with mesothelioma, but it is nonetheless positive. The existence of a threshold exposure level is not universally agreed upon. However, industrial hygienists, after careful study, have agreed that a threshold concept is consistent with their professional experiences and observations. As Dr. John Higginson once said, and I paraphrase, "For all intents and purposes, asbestos has a practical threshold when one takes into account its biological potency."

Of particular interest is the importance of the biological consequences of fiber morphology and size. Initially, a size limitation was placed on fibers being counted when using the National Institute for Occupational Safety and Health phase contrast method for asbestos. This was done because it was not practical to count shorter fibers with an optical microscope. It is recognized that for every fiber longer than 5 micrometers, there may be many more which are shorter that are not visible. However, there now is considerable experimental evidence to indicate that asbestos fibers shorter than 5 micrometers are not pathogenic. This has important environmental implications.

In the manufacture of friction materials, employe exposures are regulated by the Occupation Safety and Health Administration's Asbestos Standard. In the recent OSHA asbestos rulemaking, many of the studies relied upon by EPA for the ban and phaseout rule were also considered by OSHA. As you know, OSHA adopted practices that allow the controlled use of asbestos while EPA is proposing the material be banned. From the environmental viewpoint, the nature and extent of exposures to airborne levels of brake wear debris to which the public or employes may be exposed is not sufficient to result in disease. Furthermore, exposure to brake wear debris has not been shown by any reliable studies to cause any asbestos-related disease.

Brake linings contain approximately 50% asbestos by weight, all of which is chrysotile. Not only is chrysotile less hazardous than other asbestos types, but in friction materials chrysotile fibers are encapsulated in a solid resin matrix. During the braking process more than 99% of the asbestos fibers by weight in the brake lining mix are transformed into a non-asbestos material, reported by some to be forsterite. Furthermore, most brake wear debris is removed from the brake drum during vehicle operation. Industry studies confirmed by the EPA have shown that the brake debris which was present in the drums at the time of the brake service work contains less than 1% free asbestos by weight. Moreover, the asbestos fibers which were found in the brake wear debris are predominantly submicroscopic. As previously discussed, reliable studies have shown that, generally speaking, only longer asbestos fibers (greater than 5 micrometers in length) result in asbestos-related diseases.

Asbestos-related diseases are known to be dose-related. That is, there must be exposure to respirable asbestos fibers in excessive amounts for sufficient time before an adverse health effect will occur in some of the exposed personnel. There are well accepted exposure standards to which the results of air tests can be compared. These standards are used by the federal and state governments, and represent the concentrations to which employes can be repeatedly exposed, 8 hours per day, 5 days per week, year after year, without experiencing an adverse health effect. Studies of brake servicing operations have shown that the level of exposure to asbestos resulting from such work is well within the accepted exposure range.

My own industrial hygiene air studies conducted in dealership service garages have shown that asbestos exposure from brake wear debris was well below exposure limits in use at the time of the studies and well below exposure limits about to go into effect. The exposure to asbestos of mechanics who regularly perform brake work is of an intermittent nature. These findings have been verified by analysis of industrial hygiene studies conducted by NIOSH.

Brake relining operations were first identified as a possible source of potential excessive exposure to asbestos in reports published in the mid-1970's. Since that time, however, my own studies, as well as reliable reports appearing in literature, have shown that the studies on which the 1974 opinions were based are in error. Even though brakewear debris is known to contain a very minute percentage of asbestos fibers, no asbestos-related disease was found in studies in which animals were administered heavy doses of brake wear debris, and there is no study showing an excess of any asbestos-related disease among mechanics.

Substitute materials for asbestos have unknown toxicological properties. Given the long latency for the pneumoconiosis producing dusts, the introduction of new durable fibrous materials by producers gives the appearance they are "safer" than asbestos. Eventually that may prove to be true, but given the scientific evidence that is available today, General Motors believes that many of the durable fibers which EPA is suggesting be considered as replacement materials have not been studied sufficiently by their manufacturers to assess their safety or to draw comparisons with asbestos.

Suppliers have just begun to initiate experimental studies with a few of these materials. What appears to be occurring is a national movement from regulated to unregulated materials to avoid, among other things, the cost of compliance with workplace controls. This potentially could have tragic consequences. Given the fact that several asbestos substitute materials that were declared safe by EPA have later become the subject of Section 8(e) submissions, General Motors has adopted the following guideline. Until sufficient data are obtained, GM will continue using the environmental controls for asbestos when using substitute durable fibers.

In summary, exposure to asbestos received by the public and employes as a result of exposure to brake relining operations and normal braking operations, are minimal and far below the levels of exposure necessary to cause asbestos-related disease.

Because of the extremely low levels of submicroscopic asbestos present in brake wear debris and the intermittent nature of the exposure involved in brake relining aberrations, it is my opinion that asbestos brake lining and brake relining operations do not present a risk of adverse health consequences to those involved.