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PLAINTIFF'S EXHIBIT

DOW-1001

**DOES THE EPA
REALLY HAVE
A CASE AGAINST
CHRYSOTILE
ASBESTOS ?**

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THE ASBESTOS INSTITUTE

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TABLE OF

CONTENT

Foreword	3
Executive Summary	5
Introduction	8
Chapter I	
EPA has Failed to Satisfy its Statutory Obligations under TSCA	9
Chapter II	
Issues of Material Fact	10
Chapter III	
Current Chrysotile Asbestos Products do not Present Significant, Much Less Unreasonable Risks	18
Chapter IV	
AI's Counterproposals	21
Chapter V	
Concluding Comments	24
Appendix I	
The Asbestos Institute "Appalled" by Revelations at EPA Asbestos Hearings (Press Release)	25
Appendix II	
Re: EPA's TSCA Section 6 Proposal to Ban and Phase out Asbestos, Docket No. OPTS 62036 (Letter to Mr. Michael S. Winer, Esquire, Chairman, EPA Asbestos Cross-Examination Hearings and to Mr. David L. Dull, Chairman, EPA Asbestos Legislative Hearings)	33
Appendix III	
Scientific Community Unanimous in Denouncing the Banning of Asbestos as Formulated in the EPA's Proposed Rules (Press Release)	40
Appendix IV	
Re: EPA's Proposed Rulemaking on Asbestos (Letter to his Excellency Thomas M.T. Niles, Embassy of the United States of America, Ottawa, Canada)	44

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THE ASBESTOS

INSTITUTE

The Asbestos Institute (AI) is an organization whose purpose is to promote the safe use of chrysotile asbestos worldwide through research, education and information programs. Its Board of Directors is comprised of labour and industry representatives, with observers from the governments of Canada and Quebec. AI headquarters are in Montreal, Canada.

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FOREWORD

In January 1986, the Environmental Protection Agency (EPA) published its proposed rule which calls for a ban and phase out of asbestos use in the United States. From the outset, The Asbestos Institute (AI), together with the Asbestos Information Association/North America (AIA/NA), strenuously objected to the proposed rule. There is widespread agreement that the proposed rule does not reflect the most recent scientific evidence on asbestos. It is also out of step with the growing international support for the "controlled use" approach to chrysotile asbestos regulation.

In building support for its position, AI canvassed several internationally known scientists, all of whom expressed dismay with the deficiencies and shortcomings of the analysis underlying EPA's proposal and the Agency's apparent disregard for the risks posed by asbestos substitutes. AI was also an active participant in the legislative hearings on the proposed rule held in July 1986, as well as, the cross-examination hearings held in October 1986. I also personally wrote to Mr. Niles, the U.S. Ambassador to Canada, to express AI's objections to the proposed rule.

This document is intended to summarize the main arguments put forward in the 6 volume series of written comments prepared by AI experts on EPA's proposed rule. **It is shown that when all the facts are considered, EPA's proposed rule-making is simply not justified and should be withdrawn.**

The soundness of the arguments advanced by AI experts was confirmed at the cross-examination hearings held in October 1986, where EPA officials admitted, on the public record, that their data base was not current and that their analysis was flawed in many respects. **EPA officials also stated that they were aware of these shortcomings prior to issuing the proposed rule and that a number of new studies had been recently commissioned in an attempt to rectify the deficiencies of their previous work.**

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EPA's proposed rulemaking lacks scientific credibility. Its issuance constitutes an irresponsible action which has had negative repercussions not only in Canada but in other asbestos producing and consuming countries worldwide. The AI believes that EPA has a responsibility to reduce the uncertainty it has created about the future of asbestos. **Consequently, the Agency should announce at the earliest possible date the regulatory consequences of the findings of the new studies which have been commissioned.**

EPA's proposed rule and the attendant publicity have created a number of misconceptions in government, industry and labour circles worldwide. It is hoped that broad distribution of this document will be a step towards correcting these misconceptions and, that it will contribute to a better understanding of asbestos and its uses today.

Gary Nash
President and CEO
THE ASBESTOS INSTITUTE

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EXECUTIVE

SUMMARY

EPA's Proposed Rule

On January 29, 1986, the United States Environmental Protection Agency (EPA) proposed banning five asbestos containing products (roofing felt, flooring felt, floor tile, asbestos-cement pipe and clothing) and phasing out all remaining asbestos uses in the United States over the next 10 years.

■ The Occupational Safety and Health Administration

□ All \$ figures quoted in this document are in U.S. currency.

This proposal resulted from the EPA's conclusion that continued use of all forms of asbestos presents unreasonable risks to workers and the general public, and that a ban is the least burdensome means of controlling that risk. Based on the EPA's risk analysis, moving from the present OSHA ■ workplace standard to a ban will avoid some 1000 hypothetical cancer deaths of persons who would have been exposed to asbestos over the next 15 years and whose death would take place sometime after the year 2000. This, according to the EPA, would be achieved at an expected present-value cost to society of \$2 billion □.

Findings of AI Experts

A review of the documentation upon which the EPA purports to base its case has found it flawed in many respects:

*Flaw: The EPA does not support by substantial evidence – as it should by its own standards – either its findings that an **unreasonable risk** exists in the continued use of asbestos, or that the regulatory action it has chosen is the **least burdensome means** of controlling that risk;*

*Flaw: There are **disputed issues of material fact** which lead the EPA to overestimate the potency of asbestos, the level of exposure to it in different situations and the populations at risk. AI experts estimate that the flawed methodology used by EPA has led to an **average five-fold overestimation of the potency of asbestos fibres**. The Agency has also **overestimated exposure and population at risk figures by at least a factor of 40**.*

■ **EPA** submitted new information on substitutes, on the public record, just prior to the start of the cross-examination hearings in October, 1986. Because some of the reports were found to be inadequate, new studies have been commissioned.

***Flaw:** As a result of its overestimation of both the potency of asbestos and the level of exposure to it, the EPA significantly overestimated the benefits of its proposed asbestos ban and phase out. AI is confident that the benefits of EPA's proposed rule, if any exist at all, are more likely to approach the range of 0 to 5 hypothetical cancer cases avoided and not the 1000 predicted by EPA.*

***Flaw:** EPA has also underestimated the economic costs to society and industry of its proposed ban and phase out. AI experts estimate that the costs of the proposed rule could easily exceed \$4.5 billion, or twice the Agency's estimated cost.*

***Flaw:** The Agency does not assess – as it is required to do – the health and safety risks associated with non-asbestos substitutes. EPA's simplistic assumption that substitutes are safe or safer, could result in increased risks to workers and the general public, especially when substitutes may not have been proven as technically efficient or more safe in health terms, and where their production and use may not be governed by appropriate regulations. Indeed, there is a real possibility that a ban of asbestos may result in more cancer related and other deaths in the United States than if the proposed rule were not implemented.*

Absence of Unreasonable Risk

When the benefits and costs of the EPA's proposal are properly assessed, AI experts estimate that the cost to society of the proposed rulemaking could range from **\$100 million to several billion dollars for each hypothetical case avoided and not \$2 million as estimated by EPA.** This demonstrates the **absence of an "unreasonable risk"** from current uses of asbestos containing products. It is also evident that the proposed rule would represent an inefficient use of society's scarce resources.

Contrary to the EPA's contention, the risks presented by today's uses of chrysotile asbestos are **not** significant. According to AI experts, neither the occupational risks remaining after OSHA's recent action, nor the general population risks cited by EPA are significant as that term is typically interpreted. □

□ **L**ife time risks of approximately one in 1000 are generally considered to be insignificant in the occupational context. For general population, the corresponding figure is one in 100,000

Out of Step with International Consensus

EPA's proposal to ban and phase out asbestos is out of step with the growing international support for the "controlled use" approach to chrysotile asbestos regulation. **Evidence of this widespread support is The Asbestos Convention recently adopted by the International Labour Organization (ILO), entitled "Safety in the Use of Asbestos".** This document was unanimously endorsed by over 125 countries, including the United States, in Geneva in June 1986. **It clearly favours regulation governing exposure limits, engineering controls and workplace practices to control asbestos exposures; it does not favour widespread product bans.**

An exception is made with respect to **crocidolite**. Here the Convention calls for the **prohibition of this fibre and of the use of products containing this fibre, with derogations permitted when replacement is not reasonably practicable**. The controlled-use approach to chrysotile asbestos regulation is also consistent with the position of the World Health Organization, and that of many countries, including Japan, Canada, the European Commission (EC) and EEC member countries.

AI Preliminary Proposals

The AI agrees with EPA that minimizing asbestos exposures to the lowest practical level possible is prudent, and proposes several regulatory control options that the Agency might wish to consider:

- **A.** Regulations to control exposures during brake replacement and repair;
- **B.** Regulations to control exposures during asbestos-cement product installation;
- **C.** Labelling of asbestos containing products;
- **D.** Significant New Use Rules (SNURs) for new asbestos uses.

The AI also suggests that the **approach of the Commission of the European Economic Community (EC) be considered as a model on which to base asbestos regulation in the United States**. This approach provides for an exposure control limit of 1f/cc for all forms of asbestos other than crocidolite, with production of a limited number of asbestos containing products being prohibited (e.g. toys, sprayed-on insulation, etc.). For crocidolite, most crocidolite containing products are now prohibited under the EC approach, with exceptions provided for asbestos-cement pipe, acid and heat resistant seals, packings and gaskets, and torque convertors. For these latter products, a workplace exposure limit of .5f/cc for crocidolite is applied.

Concluding Comment

The AI has explored in depth whether the EPA's proposed rulemaking on asbestos is justified, and this **review by AI experts demonstrates that it is not**. EPA officials have admitted inadequacies in their work which were known prior to the issue of the proposal. The EPA is now completely redoing its analysis, as a host of new studies have been commissioned.

There is a need for fair and equitable process, especially to ensure that the public has the opportunity to review and comment on the results of the new studies, and **secondly**, to ensure that the evidence clearly justifies any proposed rule.

For the above reasons, the AI believes that the proposed ban rule should be withdrawn immediately, and that a new rule should be considered only when the new EPA studies are complete.

INTRODUCTION

■ The Asbestos Institute joined with The Asbestos Information Association/North America to engage the Washington firm of Kirkland & Ellis to handle the legal process on EPA's rulemaking.

This document constitutes a summary of AI's ■ initial written comments submitted in July 1986 on the EPA's proposal to ban and phase out asbestos use in the United States. It is conclusively demonstrated that the EPA has vastly overestimated the benefits of its proposal while simultaneously underestimating its costs. When all the facts are properly considered, EPA's proposal is revealed to be both extraordinarily wasteful of societal resources and contrary to the Toxic Substances Control Act (TSCA), which requires EPA to select the least burdensome measures when seeking to reduce "unreasonable risks".

The findings of AI experts are presented as follows:

- **Chapter I** – discusses the applicable legal principles of this rulemaking and the extent to which EPA has only partially sought to satisfy its burden of proof under TSCA.
- **Chapter II** – summarizes the case EPA advances to justify its proposal and contrasts it with the testimony of AI experts which disputes the material facts on which EPA's case apparently relies.
- **Chapter III** – demonstrates that today's uses of asbestos do not present significant, much less unreasonable risks and consequently that EPA's proposed rulemaking is simply not warranted on any grounds.
- **Chapter IV** – presents AI's preliminary counterproposals.
- **Chapter V** – Concluding Comment.

A number of other information items are appended to this report. These include: The AI press release and background notes on findings of cross-examination hearings held October 1986 (Appendix I); Summation letter prepared by AI legal counsel following the cross-examination hearings (Appendix II); AI press release which summarizes the views of internationally known scientists on EPA's proposal (Appendix III); and, AI letter to Ambassador Niles (Appendix IV).

CHAPTER I

EPA has Failed to Satisfy its Statutory Obligations under TSCA

As the EPA has tacitly conceded, its present rulemaking to eliminate all manufacturing, processing and use of asbestos, is **unprecedented** under the Toxic Substances Control Act (TSCA) and indeed in the EPA's history.

The EPA's sole justification for its extraordinary asbestos ban and phase out proposal is its weighing of the health risks from continued use of asbestos and asbestos-containing products against the costs attributable to the proposed regulation. In this regard, the EPA concludes that, based upon factual data regarding the potency of asbestos, the current exposures from new asbestos products throughout their life cycle, and the costs of substituting non-asbestos products for asbestos-containing products – **the estimated cost of this rule (present-value \$2 billion) appears reasonable in view of the unreasonably large number of asbestos-related deaths and serious illnesses (about 1000 cancer cases 15 to 50 years from now) that would occur without a phase out of asbestos.**

The EPA does not prove, as it is held to do, that risks posed to any individual from continued asbestos use today are significant.

Although recognizing that it must choose **the least burdensome requirement... necessary to protect adequately against unreasonable risk**, the Agency does not assess any alternatives to a ban. For example, the EPA nowhere assesses whether TSCA imposed labelling, or, indeed, other TSCA requirements on the method by which asbestos-containing products are used or disposed of could constitute such "**less burdensome requirements**" under the TSCA.

Similarly, although recognizing that it must assess whether actions under other Federal statutes could eliminate or reduce unreasonable risks to a sufficient extent, the EPA does not assess whether any combination of such actions could achieve this purpose.

In sum, wholly apart from the factual deficiencies in its finding that asbestos use presents an unreasonable risk, **the EPA has also failed to present evidence showing that its proposal is the least burdensome alternative for controlling the assumed risk from the asbestos products currently being used in the United States.**

CHAPTER II

Issues of Material Fact

The EPA's case ultimately relies upon specific facts many of which are simply incorrect:

- **A.** The EPA has incorrectly determined the potency of asbestos:
- **B.** The EPA has greatly overestimated future exposure to asbestos products:
- **C.** By overestimating both potency and exposure, the EPA has significantly overestimated the benefits of an asbestos ban and phase out:
- **D.** The health and safety risks of non-asbestos substitutes are mentioned but not assessed by the EPA:
- **E.** The EPA has underestimated the economic costs to society and industry of its proposed ban and phase out.

- A. The EPA has incorrectly determined the potency of asbestos.

A.1 The EPA's linear, no-threshold model overestimates risks at today's low exposure levels.

The EPA's model for estimating the potency of asbestos fibres is based on findings of increased cancer in epidemiological studies of workers exposed at 10 to 100 fibres/cc. These high exposure findings are extrapolated by the EPA, on a linear, no-threshold basis, to estimate risks at exposures up to 300,000 times lower (namely from a maximum of 0.2 down to 0.0003 fibres/cc).

Numerous medical experts have concluded however that a threshold exists below which asbestos exposures pose no risk. Dr. Ronald Crystal of the Government's National Institutes for Health, for example writes:

No epidemiological study has shown that low cumulative exposure to any form of asbestos is linked to disease. Furthermore, there is no proof that the higher level exposure data can be used reliably to predict what will happen if a population of individuals is exposed only to low cumulative levels.

■ **F**ibre-years of exposure is defined to be the time-weighted average exposure multiplied by the number of years exposed.

As a matter of fact, none of the many epidemiological studies of highly exposed asbestos workers has found any increased risk of disease among workers with less than 10 fibre-years of exposure ■. This leads Dr. J. Corbett McDonald, who is an author of several basic asbestos epidemiology studies, to conclude that:

Linear extrapolation to very low fibre concentrations almost certainly overestimates the true risk (associated with exposure to asbestos)...

In sum, substantial current scientific evidence indicates that no cancer risk may exist at the low asbestos exposure levels characteristic of today's manufacture, installation and use of asbestos products.

A.2 The EPA incorrectly fails to distinguish the risks from asbestos of different dimensions and fibre types in different industrial settings.

□ **R**eport of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario.

In assessing the potency of asbestos fibres, the EPA concluded it was prudent to treat all asbestos fibre types as having equivalent biological activity. The EPA also did not differentiate among fibre sizes nor industrial situations or uses in assessing the potential risk from asbestos. The Agency adopted this approach despite a number of scientific studies and reviews which have concluded that risks differ sharply based on fibre type, dimension and use. Scientific evaluations that have reached this conclusion include: - the United Kingdom's Advisory Committee on Asbestos, 1979, 1983 and 1985; the draft review of asbestos risk by the World Health Organization; a panel of experts in asbestos risk assessment assembled by the Department of Health and Welfare, Canada in 1985; the Ontario Royal Commission's comprehensive three-volume discussion of all aspects of asbestos use □, and the recent OSHA final rule on asbestos.

These studies and reviews have shown that:

There is up to 150-fold differential in risk of lung cancer or mesothelioma between workers exposed to different fibre types in different industrial settings:

There are more findings of amphibole fibres (e.g. crocidolite and amosite) in the lung tissue of mesothelioma victims than in those of control groups, but no higher levels of chrysotile fibres:

There are findings of mesothelioma in the neighborhoods of amphibole, but not chrysotile, mines:

There are findings of mesothelioma almost exclusively in factory workers exposed to amphiboles and at much higher rates in such workers than in factory workers exposed only to chrysotile, including substantial mesotheliomas in military (crocidolite) gas mask manufacturing workers but not in civilian (chrysotile) gas mask workers:

The most recent evidence suggests that short asbestos fibres (less than 5 microns in length) may be harmless or at least nearly so. When this finding is coupled with the low durability of chrysotile fibres in lung tissue, it appears most unlikely that short chrysotile fibres present any hazard to humans.

Oblivious to these findings, the EPA uses an "all-asbestos" approach to estimate lung cancer and mesothelioma risk.

In developing its model, EPA relied heavily on a study of insulation workers by Dr. I. Selikoff. Not only does this study represent exposures to asbestos materials that are not encountered in any currently manufactured products, but it also lacks any of the necessary exposure information to develop quantitative dose-response data.

Inadequacies of Selikoff's study for risk assessment were recognized by the Consumer Product Safety Commission which decided to classify the document as a "level 2 study" for which no gradient of risk with exposure level could be determined.

A more discriminating examination of each major product slated to be banned or phased out can be made based on epidemiological studies of workers in that product sector. Such work was carried out by AI experts. **This closer examination led to the conclusion that EPA's decision to use an all-asbestos model which does not discriminate between fibre types, fibre lengths, and different industrial settings, has resulted in an average five-fold overestimation of the potency of asbestos fibres in the uses covered by EPA's proposal.**

— B. The EPA has greatly overestimated future exposures to asbestos

In order to predict the benefits of its proposal, the EPA combines its model of asbestos potency with estimates of exposures due to asbestos use for the next fifteen years assuming current products are not banned or phased out.

According to Dr. Gordon Bragg, Prof. of Engineering at Waterloo University, who served as an expert independent consultant on asbestos control and exposures for the Ontario Royal Commission on Asbestos:

The Agency has selected estimation procedures without regard to reliability, accuracy or precision. As a consequence, EPA's exposure estimates frequently contradict both common sense and data reported by independent investigators, industry, OSHA and EPA itself. The EPA estimates consistently exaggerate the actual exposure populations and levels substantially.

The listing below compares the EPA's exposure estimates by product to those documented by the AI's experts.

TABLE I

Comparison of EPA and AI Documented Estimates of Future Asbestos Exposures

Fibre Person-Years ($\times 10^3$)

	EPA Estimates	AI Documented Estimates	AI Documented Estimate/EPA Estimate Ratio
V/A Tile	773.0	33.0	1/23
A/C Pipe	121.0	0.5	1/242
Roofing Felt	7.5	0.05	1/167
A/C Sheet	61.0	0.6	1/100
Friction Prods.	783.0	7.6	1/103
Coatings	71.0	0	0
Gaskets	60.0	3.5	1/17
Adhesives			
Sealants	2.1	0.5	1/4
Paper	2.4	0.6	1/4
Gaskets	5.1	0.5	1/10
TOTAL	1,886.0	47.0	1/40

Examples of some of the most important factual and methodological inaccuracies in the EPA's procedure for arriving at these fanciful figures are provided below:

B.1 The EPA's calculation of exposure to asbestos fibres from vinyl asbestos tiles due to new tile use

The EPA has estimated the population exposed to new vinyl asbestos tile by assuming that more than one half of all commercial and education building space will be covered with new vinyl asbestos tile over the next fifteen years. In addition, the Agency estimates that 75 million persons in the future will work or go to school in buildings with new vinyl asbestos floor tile, and be subjected to average exposures of .0005 f/cc for seven or eight hours per day, 180 or 250 days per year.

Using accurate data on total U.S. floor space, Dr. Bragg finds that current production levels will cover at most 4 per cent of U.S. floor space within the next fifteen years and that over that period, on average, only 2.0 per cent of the population, or 3 million people, will be exposed. This is 1/25th of the population estimated by the EPA.

In addition to seriously questioning the accuracy and representativeness of the studies on which EPA based its exposure estimates, Dr. Bragg also noted that the EPA ignored the findings of one study which showed asbestos fibres emitted from vinyl tile wear were less than 5 microns in length, which is the length at which asbestos potency is typically calculated. **This suggests that the exposure to asbestos fibres from vinyl asbestos floor tile is not .0005f/cc but more likely zero.**

Based on their findings AI experts were able to conclude that cancer deaths avoided by banning asbestos vinyl floor tile were more than 200 times lower than that estimated by EPA and could well be zero.

B.2 The EPA's incorrect determination of exposures to asbestos fibres resulting from friction product repair and replacement activities.

The EPA estimates that 587,000 persons will be involved over the next 15 years full-time repairing and replacing asbestos-containing drum and disc brakes at exposures from 0.04 to 0.1f/cc. The Agency also estimates that another 36,000 persons will be exposed during clutch repair. The EPA did not present any substantial data to support its population estimates.

According to Dr. Bragg, based on the fact that a full-time brake-mechanic can perform five replacement and repair jobs per day, or 1,250 per year for a 250 day working year; and since 30 million repair jobs are performed per year, the equivalent of 24,000 full-time workers can be expected to be involved in this process. After cross-checking against the weekly frequency with which ordinary mechanics repair brakes, Dr. Bragg concluded that about 41,000 person equivalents repair friction products. **This is fifteen times less than the 620,000 total full-time people estimated by the EPA.**

Apart from overestimating the population exposed, the EPA also substantially overestimates the potential exposure levels in brake repair and replacement. As a matter of fact, the EPA relies on a single data point for its calculations.

Numerous, primarily government studies, show that the EPA's value of 0.04 f/cc or higher is a pessimistically high estimate of the average value of exposure for brake repair and maintenance workers that incorrectly includes peak values. **The extensive data reviewed by the AI indicates that average time-weighted average exposures can be controlled to below 0.01 f/cc; four times less than the EPA estimate. This figure is confirmed by OSHA, which also estimates the average level of exposure in such activities under its new asbestos standard to be 0.01 f/cc.**

Taken together, these factual errors on population and exposure levels lead the Agency to **overestimate** the potential friction product repair and replacement exposures, and thus **the benefits of its proposal in this sector, by a factor of at least 60.**

EPA's other exposure estimates are similarly flawed. Overall, AI experts concluded that EPA has overestimated by a factor of more than 40 the potential exposures over the next fifteen years that could be eliminated by a ban and phase out rule.

- C. The EPA significantly overestimates the benefits of an asbestos ban and phase out.

The preceding discussion of the errors in EPA's potency and exposure estimates show that the benefits from the proposed ban and phase out are greatly exaggerated. AI experts are confident that the benefits of EPA's proposed rule, if any exist at all, are more likely to approach 0 to 5 hypothetical cancer cases avoided and not 1000 as predicted by the EPA. The following table indicates the significant discrepancies between the EPA's case and the better documented estimates prepared by AI experts.

TABLE II

Comparison of EPA and AI Documented Estimates of Cancer Cases Avoided by a Ban and Phase Out

	EPA Estimates	AI Estimates (Maximum)
Vinyl asbestos floor tile	468	1.6
Friction products and repair	386	0.32
Asbestos-cement pipe	82	0.29
Asbestos-cement sheet	31	0.20
Other	33	2.49
TOTAL	1000	4.90

Confirmation of the EPA's substantial overestimate of the benefits of an asbestos ban in various product categories is also provided in the documentation supporting the just-issued OSHA standard for asbestos.

- D. The health and safety risks of non-asbestos substitutes are mentioned but not assessed

The EPA fails to consider the risks presented by substitutes for chrysotile and other asbestos fibres. This constitutes a significant legal and factual mistake. Accordingly, the AI asked Dr. Joseph Rodricks, formerly the chief risk assessment expert at the Food and Drug Administration and now a principal of Environ. Inc., to evaluate the potential risks from exposures to non-asbestos materials that would be used if asbestos was eliminated. Dr. Rodricks' overall conclusion is:

Based on the data in this report, we feel EPA's analysis is insufficient to conclude that risks from asbestos substitutes are lower than those posed by asbestos.

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With regards to alternative pipe materials specifically, Dr. Rodricks concludes:

Regulation of asbestos would increase the production of polyvinyl chloride pipe and increase the number of workers exposed to vinyl chloride...

Foundry workers (involved in ductile iron pipe production) are at increased risk of death from lung cancer. Traumatic injury leading to mortality is also substantial in these industries...

(In addition), synthesis of vinyl chloride monomer (a requisite step in the production of polyvinyl chloride pipe) results in the production of wastes containing additional chemicals that are carcinogenic in humans or animals, and workers in iron foundries have an increased risk of lung cancer that may not be associated with iron per se.

(And), if an asbestos substitute would require a process or produce a product that would result in a concomitant increase in mortality (e.g., an increased use of energy), these predictable deaths should also be considered when the life cycle benefits and costs of regulating asbestos are evaluated.

In most of the non-pipe applications of chrysotile asbestos, the feasible substitutes are other fibrous materials, including fibrous glass, ceramic fibres, carbon/graphite fibres, aramid fibres, mineral wool, attapulgite, polyethylene and polypropylene pulps and fibres. Varying amounts of toxicologic and epidemiologic data exist on these fibres. With respect to most of these fibres, however, suppliers have adopted a cautious attitude. SOHIO Carborundum, for example, labelled its ceramic fibres with the warning: **"Possible Cancer Hazard Based on Tests with Laboratory Animals"**, and has written to its customers recommending **"engineering control of airborne fibres to the lowest level attainable."**

In sum, without a comprehensive detailed review of potential exposures, industrial hygiene controls, and potency, it is impossible to determine whether the use of substitute fibres for asbestos would decrease health risks. In addition, since many motor vehicle brake systems rely on asbestos-containing friction materials to meet performance standards and customer expectations, **consideration must be given to the safety risks which would be created by the premature elimination of all asbestos friction materials from motor vehicles.**

The potential risks posed by asbestos substitutes were recognized by The International Labour Organization at its 1986 Geneva meetings, where a decision was taken to set up a tripartite working group to study the health and safety aspects, including preventive and protective measures, of natural or artificial fibres other than asbestos.

Totally apart from the increased monetary costs of these substitutes, therefore, the wisdom of the EPA's proposal may be questioned because the costs in terms of added health and safety risks of these substitutes may be as large or even larger than the EPA's estimated benefits from the termination of asbestos use. **This suggests that there is a real possibility that a ban of asbestos would result in more cancer related and other deaths in the United States than if one were not implemented.**

- E. The EPA has underestimated the economic costs to society and industry of its proposed ban and phase out

The EPA estimates the present-value cost of its proposal at about \$1.98 billion.

Understanding the basis of the EPA's cost estimate has been a difficult, if not impossible, task. An expert, Dr. Robert Crandall of the Brookings Institution, nonetheless attempted to evaluate a few of the basic economic assumptions and data bases upon which the Agency appears to be relying and found them flawed in several respects.

Combining the EPA's factual and methodological errors, Dr. Crandall concluded that it is likely the Agency has underestimated by one half or more the present-value costs of a ban and phase out which could range as high as \$4.5 billion rather than \$2.0 billion estimated by EPA.

This conclusion is supported by testimony given by the Chlorine Institute at the public hearings held in July 1986. According to Chlorine Institute officials, the cost of retrofitting existing operations currently using asbestos diaphragm cells in the production of chlorine could alone approach \$2 billion. The chlorine industry in the United States presently uses 900 tonnes of asbestos fibre per year.

CHAPTER III

Current Chrysotile Asbestos Products do not Present Significant, Much Less Unreasonable Risks

— A. Unreasonable risks

Until an assessment of risks from substitute products is made, it is impossible, not to mention improper, to make an unreasonable risk finding with regards to asbestos.

But, even ignoring the potential health and safety costs arising from substitutes, it is clear that no finding of unreasonable risk can be made with regards to asbestos even if all of the EPA's data were accepted.

The EPA discounts the costs of the proposed rule to present-value to obtain the estimated \$2 million per cancer case avoided (\$2 billion divided by 1000 cancer cases avoided) upon which it predicates the existence of unreasonable risk. **This cost-effectiveness ratio implicitly assumes that spending \$2 million today to prevent a death tomorrow is of the same value as spending \$2 million today to prevent a death 15 to 45 years from now.**

However, as the Office of Management and Budget (OMB) noted earlier this year:

Since most people obviously prefer to postpone their own and others' deaths, they clearly value lifesaving in the present more than lifesaving in the future. Thus, because it both costs less to save lives in the future and because society values lives saved in the present more than lives saved in the future, projects that save lives in the future should be weighed less compared to projects that save lives in the present.

Dr. Robert Crandall of the Brookings Institution agrees, noting that any assumption to the contrary defies common sense:

To argue otherwise is to suggest that EPA should be indifferent between a regulatory action that reduces deaths by 1000 next year and one which reduces them by 1000 in, say 2010...

As Dr. Crandall notes, if the EPA were to discount its estimated benefits of the proposed rule by the same 10 per cent discounting factor it employed in estimating the costs of the proposed rulemaking, the cost per cancer avoided would be \$104 million and not \$2 million. Moreover, it is clear that the EPA's proposal will cost far more than \$100 million, since the EPA proposes to regulate in the workplace on top of the OSHA regulations estimated to cost already \$125 million per cancer case avoided. Dr. Crandall concludes from his assessment of regulatory behaviour that:

No one suggests that it is prudent to spend as much as \$100 million or \$200 million in the pursuit of reducing one statistical death through health-safety regulation.

The EPA's proposal – even if one accepts the Agency's incorrect factual assessments of potency and exposures and ignores all potential health and safety risks of substitutes – makes exactly such a suggestion. On these grounds alone, it must be rejected.

– B. Significant risks

The risks the EPA seeks to regulate here must be significant as well as unreasonable so that limited societal resources are wisely employed.

The AI asked Mr. Grover Wrenn, formerly the head of the Health Standards Office of OSHA, to review the potential risks posed by continued asbestos use and to relate the risks to those that society and government regulators typically find significant.

According to Mr. Wrenn, society generally finds lifetime risks of approximately one in 1000 to be insignificant in the occupational context. By contrast for general population, risks are generally not considered significant unless they exceed one in 100,000 and are experienced by large numbers of persons.

Following a review of the estimated potential risks of asbestos exposures in the workplace as prepared by AI experts, **Mr. Wrenn concluded that asbestos workers almost without exception face risks of less than one in 1000 under the new OSHA standard.** Furthermore, these risks are much lower than risks of accidental death in industry. They are also lower than the residual health risks of many other known carcinogens, which are stringently regulated by OSHA.

In those few instances where a small number of workers could face risks slightly above one in 1000, various work practices and other requirements could easily reduce them below that level.

Using both the EPA's and the more accurate exposure estimates arrived at by AI experts, **Mr. Wrenn has found that with regards to the general population, without exception, the exposure and consequent risks are well below the lifetime one in 100,000 risk benchmark.**

In sum, the risks about which the EPA is concerned in its proposal are almost without exception below the risk level commonly accepted by both the public and regulators. **As insignificant risks, they cannot and should not serve as the basis for a ban and phase out of all asbestos uses.**

- C. The EPA's proposal would achieve very little at a huge cost to society

With regard to the cost-effectiveness of the EPA's proposal, Dr. Crandall concludes as follows:

I have shown that at a minimum, using only government estimates (of potency and exposure), the current EPA proposal to ban and phase out asbestos involves the expenditure of between \$104 million and \$995 million per expected present life saved. It is possible that the cost could even be in the billions of dollars per life saved.

According to Dr. Crandall, the EPA's unreasonable risk finding is thus clearly unjustified:

To use a worst-case scenario to justify a regulation that costs, say, \$50 million or \$100 million per expected cancer avoided when society spends up to \$500,000 or \$1 million to reduce fatalities from other risks is both inequitable and inefficient. It is inequitable because it allocates to one group of citizens at risk far more than to others facing similar risks. It is inefficient because it requires the expenditure of resources that could be used with greater effect elsewhere to reduce risks or for other productive purposes.

Also, we must remember that the EPA's proposal may be unreasonable and its regulatory prescription unwarranted simply because it imposes greater than present risks on society via the promotion of asbestos substitutes.

- D. The international consensus is that chrysotile asbestos can be used safely with adequate controls

The EPA's ban and phase out proposal is extremely wasteful as it seeks to spend enormous resources to address insignificant risks. Under these circumstances, it is hardly surprising that, in June 1986, the International Labour Organization (ILO), at a plenary session in Geneva, Switzerland, reaffirmed its earlier conclusion that the wise societal course concerning asbestos, other than crocidolite, is to assure its safe use through appropriate controls - not to ban or phase out all use of these valuable minerals. For crocidolite, the Convention calls for the prohibition of this fibre and of products containing this fibre, with derogations permitted when replacement is not reasonably practicable. This consensus was arrived at by representatives of government, labour, and industry from more than 125 nations around the world, including the United States.

The various international bodies have all recognized, as the EPA does not, that all chemical substances can pose significant or unreasonable risks in certain applications if not properly controlled, but that most current uses of chrysotile asbestos do not fall within that category.

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CHAPTER IV

AI's Counterproposals

The AI agrees with the EPA that minimizing asbestos exposures is prudent as should be the case for any chemical substance that poses health risks at high exposures. Controls to minimize exposure have been demonstrated to be both practical and effective. But the EPA – in direct contradiction of the international consensus that chrysotile asbestos can be used safely when appropriately controlled – nowhere considers the many potential alternatives short of a ban that would help assure safe use. The EPA has, therefore, failed to even attempt to support the necessary finding under Section 6 of the TSCA that it has chosen the least burdensome requirements to address any significant or unreasonable risks that may exist in continued use of asbestos.

We repeat here what Dr. Morton Corn, former Assistant Administrator of OSHA, recently told the American Industrial Hygiene Conference (AIHC):

Safety is a relative term; it is acceptable risk. The tools of engineering control, combined with work practices and personal protective equipment usage can reduce the risk of using potentially toxic materials to a level comparable to other commonplace risks in life.

And he continued, because asbestos "is not a trivial material with numerous substitutes", it is questionable that society should "ban" the material.

The AI urges the EPA to consider – if it believes further controls on asbestos are appropriate – the following types of regulations:

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— A. Regulations to control exposures in brake replacement and repair

Peak exposures may occur in certain circumstances in poorly controlled brake repair operations. A more comprehensive work practice regulatory system could effectively reduce such exposures.

As Dr. G. Bragg documents, use of vacuum cleaners, supplemented by occasional respirator use, can assure average exposures below 0.01 fibres/cc. Such an approach would address the vast majority of the risks from asbestos exposure which the EPA believes exist in such operations. In addition, compared to the EPA's proposed phase out of asbestos use in friction materials, recommended procedures would address potential exposures from replacement of already installed asbestos products, as well as, reducing exposures from other fibrous materials in brake operations.

— B. Regulations to control exposures in asbestos-cement product installation

As Dr. Bragg notes, the total time during which potential exposures occur in asbestos-cement pipe installation (e.g. cutting, tapping) averages a few minutes per day. Provisions for even simple respiratory protection during those few minutes could effectively eliminate any asbestos exposures during asbestos-cement pipe installation. Similarly, an EPA program to promote additional improvements in cutting and tapping tools used in such operations could supplement industry efforts in this area.

— C. Labelling of asbestos-containing products

Asbestos-containing products could be labelled with detailed information on safe product uses. The EPA mentions labelling of asbestos-containing products but neither proposes language for such a requirement nor discusses its efficacy. The new OSHA standards already include labelling requirements for all asbestos products that may cause exposures in the workplace above the 0.1f/cc action level. These requirements are likely to apply to all products of concern here to the EPA, but if there are gaps that the EPA perceives, a broader system of labelling could be instituted under the TSCA.

— D. Significant New Use Rules (SNURs) for new chrysotile asbestos uses

Although the AI does not believe any significant or unreasonable risk exist in the present uses of chrysotile asbestos, the AI, as always, is interested in developing programs, including regulations as appropriate, to promote the safer use of asbestos.

- E. The Approach of the Commission of European Economic Community (EC)

The AI also suggests that the approach of the EC be considered as a model on which to base regulation in the United States. This approach provides for an exposure control limit of 1f/cc for all forms of asbestos other than crocidolite, with the production of a limited number of asbestos-containing products being prohibited (e.g. toys, sprayed-on insulation, etc.). With regards to crocidolite, most crocidolite-containing products are prohibited under the EC approach with exceptions provided for asbestos-cement pipe, acid and heat resistant seals, packings and gaskets, and torque convertors. For these latter products, a workplace exposure limit of .5f/cc for crocidolite is applied.

The Asbestos Institute urges the EPA to consider the above ideas as presenting *much more effective means of protecting human health* than the unwarranted and unjustified proposed ban and phase-out.

CHAPTER V

Concluding Comments

Because the EPA's proposal to ban and phase out asbestos is so far out of step with the international consensus favouring safe use of chrysotile asbestos, the AI has explored in depth whether it has any basis in law, fact or policy. This review, summarized in this document, has shown that it does not.

More importantly – apart from not justifying its draconian measure, as well as causing irreparable damage to U.S., Canadian and other industry interests worldwide – the EPA has ignored the broader consequences of its proposal. The proposed rule would increase the risks stemming from the use of substitutes which may not have been proven more technically efficient, or more safe in health terms. It will also cause a shift away from asbestos-cement products, which would create particular problems in supplying water to people in many developing countries where lack of potable water is known to be a major cause of death and where substitute piping systems may be too costly when related to asbestos-cement.

For all of these reasons, the AI urges the Agency to act expeditiously to withdraw its present proposal to ban and phase out asbestos.

APPENDIX I

■ **P**ress release

The Asbestos Institute "Appalled" by Revelations at EPA Asbestos Hearings

Montreal, October 15th, 1986 – As cross-examination of EPA witnesses continues today, Mr. Gary Nash, President of the Canadian-based Asbestos Institute, said he is "appalled by EPA's acknowledgment that its data base for the asbestos rule is out-of-date and does not reflect circumstances in the industry today."

During last week's cross-examination, it was disclosed that the EPA proposal was prepared by persons lacking scientific and technical expertise who made baseless or exaggerated estimates of health risks regarding current asbestos products. EPA is now revising those studies.

Irresponsible Action

"By revising their studies at this time, Mr. Nash said, "they are forcing the Asbestos Institute to shoot at a moving target. We are literally being forced to waste time and money to respond not only to the flawed original data but possibly to new information we haven't seen yet."

"The way in which EPA is handling the asbestos issue is totally irresponsible, given the adverse consequences to Canada and other asbestos-producing and consuming countries," he continued.

EPA's original rule was proposed last January. In July, officials indicated that they would issue a final rule by next summer. By changing its economic and exposure data at this time, EPA would appear to be lengthening the rulemaking process. This increases uncertainty in the marketplace.

The Institute questions why EPA was in such a hurry to promulgate a rule based on such flawed data, especially when officials admitted prior knowledge of the shortcomings in their data and analytical models.

Flawed Analysis

EPA's health witnesses admitted last week that they had overstated the health risks regarding cancer. The Asbestos Institute is confident that the benefits of the proposed rule, if any exist at all, are more likely to approach its estimate of 5 hypothetical cancer cases avoided and not the 1 000 predicted by EPA. What this means, is that it will likely cost hundreds of millions of dollars to prevent a single hypothetical cancer case under the proposed rulemaking as opposed to the \$2 million which EPA has estimated.

EPA's process does not explicitly provide for continuation of hearings to address the new data. Even though The Asbestos Institute has directed its legal counsel to ask for additional cross-examination, there is a possibility that The Asbestos Institute will not have an opportunity to cross-examine, comment on or even look at any of the new data before the final rulemaking is issued.

Scientists' views confirmed

EPA admissions confirm the views previously expressed by mainstream international scientists. The EPA analysis suffers serious scientific and methodological deficiencies and "bears little resemblance to the real world situation."

The Asbestos Institute will continue to pressure EPA to empanel a group of true scientific experts, to allow cross-examination, to ensure there is full and open disclosure on pertinent issues. Looking at the way EPA is approaching this issue, Mr. Nash said "we wonder if EPA Administrator Lee Thomas is being well-advised."

EPA continues holding cross-examination sessions today through October 17 at the Skyline Inn, South Capitol and I Streets, S.W., from 9:30 a.m. to 5 p.m. daily. Subjects to be covered include risks posed by substitute materials and less burdensome alternatives to the EPA ban and phase-out.

Note to Editors.
Attached background paper
cites specific areas of inaccura-
cies in EPA rulemaking.

Background Notes on EPA's Public Hearings

In October (October 6-10, 15, 17 and 21, 1986), EPA staff members responsible for EPA's asbestos ban and phaseout proposal were cross-examined by Asbestos Institute ("AI") counsel at hearings in Washington, D.C.

AI's cross-examination showed that EPA's proposal was prepared by persons **lacking scientific and technical expertise who made baseless or exaggerated estimates of health risks from current asbestos products.**

This background memorandum summarizes key testimony brought out in cross-examination and demonstrates that the true risks presented by continued use of asbestos in the U.S. are much closer to the factual testimony submitted by AI's witnesses than to EPA's claim that its ban/phaseout proposal will save 1000 American lives.

Before summarizing what EPA's witnesses had to say in the cross-examination hearings, nine months after the Agency issued its proposal, it is useful to keep in mind the main difference between the factual testimony of AI's expert witnesses and the findings underlying EPA's proposal:

— **A.** AI's experts concluded that EPA's proposal, if it accomplished anything at all, would avoid approximately 5 cancer cases 30 to 50 years from now rather than the approximately 1,000 cases predicted by EPA:

— **B.** According to AI's witnesses, EPA's overestimate (1,000 vs. 5 cases) is attributable **both** to an **overestimate** of the **health risks** (potency) of asbestos and to an **overestimate** of the **cumulative exposure** Americans would face from continued production and sale of asbestos products:

— **C.** AI's expert, Dr. Crandall, Ph.D., found the present value of EPA's proposal to be **more than \$4 billion rather than the \$2 billion estimated by EPA**. Dr. Crandall also recommended that EPA's whole approach to cost and benefit estimation be reconsidered so as to take account of the fact that most of the costs would be borne immediately while the predicted benefits would not accrue until the 21st century:

— **D.** AI's expert, Dr. Rodricks, Ph.D., concluded that **any health risks posed by continued use of asbestos were likely to be more than offset by the greater risks of asbestos substitutes** (many of which appear to be carcinogenic), and by the very real possibility that **asbestos substitutes in lifesaving uses** (e.g., auto brakes) **may not perform as well as asbestos**; and,

— **E.** AI's experts accordingly urged that EPA consider "less burdensome" regulatory alternatives to the proposed ban and phaseout, and that EPA adopt the "controlled use" approach followed by the EEC, the United Kingdom, and the Ontario Royal Commission and recently endorsed by the International Labor Organization.

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The following is a summary of the testimony given by EPA witnesses.

- A. Overestimate of the Health Risk (Potency) of Asbestos

The first critical element in any evaluation of the possible benefits of EPA's proposal is the potency of asbestos in producing disease. EPA's witness on this issue, Bruce Sidwell, is neither a medical doctor nor a Ph.D. in toxicology, epidemiology or bio-statistics. Instead, Mr. Sidwell is an EPA staffer (a plant biologist) who assessed the risks of asbestos based exclusively on a report prepared for the U.S. Consumer Product Safety Commission, (commonly referred to as the CHAP's Report) at the direction of an office director who lacked any relevant technical expertise. Hearing Transcript ("Hrg. Tr.") at 15-17.

Mr. Sidwell was accompanied in his testimony by Dr. Marvin Schneiderman, one of the seven authors of the CHAP's Report. Dr. Schneiderman was the only outside scientist to review EPA's proposed rulemaking. Hrg. Tr. at 18. Mr. Sidwell testified that rather than seeking expert advice itself, EPA expected scientists to come forward on their own: "I think [EPA's] assumption was that if there was additional review that had to be done, it would be done at the proposal stage. In other words, that's one of the reasons for putting out a proposal was to see what comments would come in." *Id.* at 19-20.

By contrast, AI's experts, Drs. J.M.G. Davis and K.S. Crump, are both widely regarded asbestos health scientists. Last summer, they testified in writing that the potency of asbestos varies depending upon the fiber type, size and industrial process involved. Their testimony is consistent with the findings of a number of recent studies and reviews on asbestos conducted in Canada and the United Kingdom. Although EPA ignored these distinctions in its proposal, Mr. Sidwell admitted on cross-examination that the evidence "suggests" that chrysotile (the kind of asbestos mined in Canada) may be less potent, and that fibers shorter than five microns in length may cause far less disease. In Mr. Sidwell's words, "I think on the weight of the evidence, it appears that there is a suggestion that in fact short fibers, perhaps are less potent on a fiber by fiber basis." Hrg. Tr. at 61, 78-79.

EPA's case rests upon mathematical extrapolations to consumer and environmental exposures **ten to one hundred thousand times lower** than those faced by Canadian miners and U.S. factory workers in the past, even though AI cited epidemiological studies conducted at low exposure that do not show any excess incidence of disease. While defending such extrapolations, Mr. Sidwell admitted that EPA had **overestimated** by 33% the risk of persons developing mesothelioma (a type of cancer), a concession that necessarily reduces EPA's benefits estimates by about **150 cases**. Hrg. Tr. at 26-27.

AI had asked EPA to call the world's leading asbestos health experts to testify in Washington. Repeating a similar request made by the Swiss Eternit Group in hearings last summer, AI thus challenged EPA to follow the example of the Ontario Royal Commission (ORC), which heard testimony from over twenty of the world's leading asbestos health experts before preparing its report.

On the same day (October 6) AI made its request for testimony by the world's asbestos health experts, a similar request was made in writing to EPA Administrator Thomas by Canadian Minister of Energy, Mines and Resources Marcel Masse. EPA has yet to acknowledge the obvious value of such a hearing.

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— B. Overestimate of Asbestos Exposure and Benefits

The second critical element underlying EPA's benefits estimates is the asbestos exposures expected to be caused by the continued use of asbestos over the next 16 years. This total cumulative exposure is multiplied in EPA's computer model by the estimated potency of asbestos to calculate the total benefits that supposedly would accompany banning or phasing out asbestos. In written testimony filed last summer, **Dr. Gordon Bragg**, professor at the University of Waterloo, Ontario and one of the world's leading experts on asbestos exposure control measures, concluded that **EPA's exposure estimates were more than 40 times too high**

EPA's asbestos exposure witnesses were Ms. Amy Moll and Ms. Lynn Delpire. Ms. Moll and Ms. Delpire respectively have college degrees (B.A.'s) in economics and chemistry, and Ms. Moll has a Masters in Public Administration. On cross-examination, Ms. Moll and Ms. Delpire admitted that they were **not qualified** to measure asbestos fibers by any of the approved techniques; that they were **not qualified** to advise EPA regarding engineering or other controls to reduce asbestos exposures; and, indeed, that they had **never been inside an asbestos product plant**. Hrg. Tr. at 155-59.

Ms. Moll and Ms. Delpire were on the witness stand for two full days during the course of which they conceded that the Agency's exposure estimates reflected a number of errors, and that major portions of EPA's exposure case were in the process of being redone by outside contractors. In particular, EPA's witnesses agreed that the following problems, among others, exist in EPA's exposure case:

— **1.** EPA's exposure and benefit estimate (**468 cancer cases avoided**) from a ban on vinyl-asbestos (V-A) floor tile rests on one study (Constant) and a two-page memorandum listing a few data points (Lee) that were shown on cross-examination to be deficient. EPA promised that at least one of these studies (Constant) would not be used in EPA's final estimates, and admitted that if EPA were consistent with OSHA (measuring only fibers longer than five microns), its exposure and benefits estimates would drop to **zero cases**. **Id.** at 223-226; 238-242; 245-46.

Ms. Moll hinted that EPA might base new floor tile exposure estimates on four isolated asbestos measurements taken at a single building outside Paris, France in 1980. The person taking those readings (Dr. Sebastien) stressed in his case report the need for other laboratories to take further measurements in many more buildings before any conclusions could be drawn from his work. Ms. Moll testified, however, that EPA has no plans to make any additional measurements and that it might decide to ban V-A tile based only on Dr. Sebastien's four measurements. **Id.** at 223, 228-29.

— **2.** EPA conceded that its benefits estimate (about 25 cases) for installation of A-C sheet materials is about **20 times higher than the U.S. Occupational Safety and Health Administration's (OSHA's)** benefit estimates for the same activity. (OSHA reviewed the exposure data on A-C pipe installation as well as a variety of other asbestos exposure situations in connection with its new worker standard, issued June 20, 1986). As Ms. Moll stated when asked specifically if the EPA estimates are approximately 20 times higher than the OSHA estimates, "I think that's roughly correct." Hrg. Tr. at 317.

— **3.** EPA conceded that its benefits estimate for installation of asbestos cement pipe (about 50 cases) is more than **90 times higher than OSHA's** for the same activity. Hrg. Tr. at 332.

— **4.** EPA announced that it was reconsidering its estimate of the number of full-time brake repair workers in light of AI's testimony and conceded that, on the issue of exposure levels alone, **EPA's benefit estimate (about 400 cancers avoided) is four times higher than OSHA's.** Hrg. Tr. at 356.

— **5.** EPA agreed that its estimate of the benefits of eliminating manufacturing workplace exposures (39 cases) **was more than 50% higher than OSHA's comparable estimate.** Id. at 367, 370-71, 374.

— **6.** EPA acknowledged that its estimate of the risks posed to persons living near A-C pipe and other U.S. asbestos product manufacturing plants (about 50 cases) is nearly **10 times higher** than the comparable estimate recently completed by EPA's own Clean Air Office. Id. at 429.

AI's counsel repeated during the cross-examination a long-standing request for a precise breakdown of the benefits that EPA predicts would result for each product sector and subsector if EPA's proposal were implemented. EPA finally acknowledged that this information had not been provided, but refused to promise that it would be forthcoming anytime soon, if ever. As Ms. Moll testified when asked, with regard to friction products, what would be the total number of cancer cases avoided if those products were phased out as proposed: "Yeah, we don't have that, we mentioned that yesterday." Hrg. Tr. at 343.

AI counsel announced AI's intention to request cross-examination of other EPA exposure witnesses, both on the sector-by-sector benefits information yet to be provided and on the substantial new work being done by EPA contractors to repair deficiencies in EPA's exposure case.

In the cross-examination of Ms. Moll and Ms. Delpire, it was revealed that neither did much more than skim the testimony of AI's witness, Dr. Bragg. Id. at 298, 388. Instead, both claimed that the extensive reworking of EPA's exposure case presently underway was attributable to the fact that EPA's information needed updating, a point apparently recognized even before Dr. Bragg's testimony was received. Id. at 230-32. Neither Ms. Moll nor Ms. Delpire explained why the EPA proposal had been issued if EPA already knew that the Agency data were stale and that additional data-gathering was necessary.

- C. Underestimate of the Costs of EPA's Proposal

EPA's witnesses on the costs of its proposal were Ms. Moll and Ms. Christine Augustyniak, an EPA staff economist about to receive her Ph.D. from the University of Michigan. By contrast, AI's witness, **Dr. Robert Crandall, a Fellow of the Brookings Institution in Washington**, is the author of numerous books and articles in professional journals on cost-benefit analysis.

The main thrust of Ms. Moll's and Ms. Augustyniak's testimony was that EPA was completely redoing its economic model and was gathering new data by a telephone survey to allow EPA to recalculate the costs of its proposal. As Ms. Moll testified about the EPA analysis upon which it based its proposal: "It's very likely incorrect given the current state of the asbestos industry." Hrg. Tr. at 475. Ms. Augustyniak summarized the efforts to correct this shortcoming: "There is no portion of the economic analysis that is not undergoing review at the current time." *Id.* at 480. Neither Ms. Moll nor Ms. Augustyniak would speculate on whether the new cost estimates would be higher or lower but did acknowledge that certain changes in the model (made particularly in response to Dr. Crandall's testimony) would lead to an approximate doubling of predicted costs. *Id.* at 478, 636. EPA had no explanation for why the work now underway could not have been completed before the issuance of its proposal in January 1986.

At the conclusion of the cross-examination of Ms. Moll and Ms. Augustyniak, AI's counsel reiterated AI's long-standing request for a breakdown of EPA's cost estimates on a sector-by-sector basis. AI was told that some of those estimates might lead to the disclosure of confidential information and that, in any event, EPA had not decided whether to grant AI's request. Apart from its confidentiality claims, however, EPA admitted it did not have this fundamental information available:

Q. Are you telling us that irrespective of [confidentiality] considerations, the agency cannot tell us what the costs of its proposal are with respect to, let's say, disc brakes?

A. I didn't say we couldn't. I said that we don't have that in hard copy now. We would have to go back and generate it.

AI counsel also announced AI's intention to request oral cross-examination of additional witnesses based on the cost data yet to be provided and on the new cost estimates that EPA's contractors are currently developing.

- D. Risks of Substitutes

Equally critical to the assessment EPA must make of the costs of its proposal are the risks posed by asbestos substitutes in products to be banned or phased out. EPA's witnesses, economist Amy Moll, and scientists Bruce Sidwell, Vanessa Vu, and James Rowe, agreed that it is important for EPA to know what exposures to which alternative fibers and chemicals will occur and what the potency of those fibers and chemicals is, if it is to make a rational assessment of whether the public will benefit from banning asbestos. See e.g., Hrg. Tr. at 974, 1000, 1023, 1025 (Oct. 17), 15-16 (Oct. 21), 25, 32, 60, 68.

At the time of its proposal in January, EPA had only one, short support document, authored by Dr. Rowe, on the risks of substitutes. Hrg. Tr. at 987. As EPA witnesses acknowledged at the hearings, this document had **no quantitative data** on alternative chemical exposures that would occur were asbestos banned, nor on the predicted health effects of such exposures. **Id.** at 997-99.

EPA's witnesses thus described the extensive new information the Agency has begun collecting on substitutes in the past several months. Specifically, the Agency indicated it has asked two consultants, Life Sciences and Battelle, to assess the toxicology and epidemiology of alternative fibers. Because the Life Sciences study was inadequate, a major new report on the potency of alternative fibers is currently being authored by Dr. Vu. **Id.** at 991-92. Ms. Moll further indicated that she is re-estimating which substitutes will be used for each asbestos product. ICF is conducting an extensive nationwide survey to determine what exposures occur in use of alternative fibers. **Id.** at 996, 1004. Finally, EPA described for the first time a major study being conducted by Battelle, to be peer-reviewed by the American Society of Mechanical Engineers, to determine both the feasibility and effectiveness of alternative fibers as substitutes for brakes. **Id.** at 1005-1008.

The Agency, in sum, indicated it was no longer relying on the minimal assessment of substitutes in its original support document. Instead, it is conducting extensive collection of information in order to assess **for the first time**, in any meaningful manner, substitute risks.

- E. "Less Burdensome" Regulatory Alternatives

EPA is required to impose the "least burdensome" regulatory alternative if it can identify any risk from current asbestos uses. The Agency's expert on this issue, Joseph DeSantis, a career EPA employee with no advanced scientific training, revealed during cross-examination that EPA considers only ban and phaseout schemes to be "viable" (**Id.** at 800, 865).

Even though the international community advocates controlled use of asbestos, Mr. DeSantis has never even considered such options:

I haven't thought about it long enough or looked at it in enough detail to decide whether there were specific areas where, in fact, it made sense to establish individual control mechanisms that would be enforceable and understandable by the industry as a whole. **Id.** at 809.

Nor did the Agency analyze whether individual products pose a risk. **Id.** at 890.

Mr. DeSantis did indicate that the Agency, in response to AI's comments, is finally considering other alternatives. **Id.** at 912-13. As with the other elements of EPA's proposal, AI will seek additional cross-examination on the new case.

Note: These background notes have been updated from those issued with the October 15, 1986 press release to reflect testimony which took place on October 15, 17 and 21, 1986 and to include specific references to the Hearing Transcript.

APPENDIX II

■ **S**ummary
letter prepared by AI Legal
counsel following the cross-
examination hearings

November 21, 1986

By Hand

Michael S. Winer, Esquire
Chairman, EPA Asbestos
Cross-Examination Hearings
U.S. Environmental Protection
Agency
401 M Street, S.W.
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Mr. David L. Dull
Chairman, EPA Asbestos
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Re: EPA's TSCA Section 6 Proposal to Ban and Phase Out Asbestos, Docket No. OPTS 62036

Dear Messrs. Winer and Dull:

As promised at the close of cross-examination on October 21, 1986, this letter sets forth the position of the Asbestos Information Association/North America ("AIA/NA") and the Asbestos Institute ("AI") regarding necessary future steps in EPA's pending proceeding to ban and phase out asbestos. Having reviewed the record assembled to date, particularly the cross-examination transcripts, AIA/NA and AI have concluded that the Agency's pending proposal is legally deficient and must be withdrawn. Further proceedings, including additional public comments, submission of evidence, and cross-examination, must await a new proposal – if EPA concludes after completing the work presently ongoing that issuance of a new proposal is warranted.

Under the Toxic Substances Control Act ("TSCA"), EPA has the burden of proving that each continuing asbestos use covered by the proposal poses an "unreasonable risk of injury to health or the environment." TSCA § 6(a), 15 U.S.C.

2605. The purpose of this requirement is to assure that "costs are not to be incurred unless they are offset by benefits of at least the same magnitude." S. Rep. No. 698, 94th Cong., 2d Sess. 13 (1976). In keeping with this objective, EPA also must select the regulatory alternative that constitutes the "least burdensome requirement" necessary "to protect adequately against such risk." TSCA § 6(a).

1 Cross-examination disclosed that EPA actually considered only variations on the ban/phaseout approach and that no options less burdensome than a ban or phaseout of all current uses were considered.

2 If there are any projects underway not covered by Attachment I, AIA/NA and AI request that they be promptly notified of the nature of the work, the contractor or EPA personnel involved, and the expected completion date.

3 For example, EPA had determined prior to June 29 that its economic model was flawed, but did not inform the public of this problem until the cross-examination hearing when pressed by AIA/NA and IA. As a result, AIA/NA and AI devoted considerable time and money to tell EPA something it claims already to have known.

Likewise, EPA knew before January 29, 1986 that its exposure and cost data were five years old. If EPA anticipated the need to update these data, then it should never have issued the proposal. TSCA and EPA's rules require EPA to disclose the data upon which EPA will actually rely - not concededly outdated information that EPA knows will have to be updated.

The first step of a TSCA section 6 proceeding is issuance of a notice of proposed rulemaking ("NPRM"). Section 6(c) of the Act and EPA's implementing regulations (40 C.F.R. § 750.2) require that the NPRM be accompanied by detailed findings and comprehensive disclosures of the Agency's bases for those findings. These findings and disclosures focus the remainder of the regulatory process in order that the public is granted its statutory rights to provide meaningful information to the Agency and to determine whether substantial evidence exists to support the Agency's proposal. In addition, the findings and disclosures in the Agency proposal enable the public to specify whether there are disputed factual issues that need to be resolved through cross-examination.

EPA purported to satisfy the above provisions here through its January 29, 1986 Federal Register preamble and basic support documents for each of the five components of its case, namely:

- **1. The potency of asbestos:** Report to the U.S. Consumer Product Safety Commission by the Chronic Hazard Advisory Panel on Asbestos (July 1983).
- **2. Current exposures to asbestos:** Versar, Exposure assessment for Asbestos (Jan. 9, 1984).
- **3. Risks of materials used in lieu of asbestos:** EPA, OTS, OTS, Asbestos Substitutes and Related Materials (April 24, 1985).
- **4. Economic effects of regulation:** EPA, OTS, OTS, Regulatory Impact Analysis of Controls on Asbestos and Asbestos Products (Jan. 1986).
- **5. Less burdensome regulations:** Federal Register preamble (51 Fed. Reg. 3738) at pages 3752-54¹.

AIA/NA and AI immediately became aware of procedural deficiencies in the rulemaking record. We brought these deficiencies to EPA's attention in letters dated February 12 and March 6. Our six-volume June 29 written comments further described numerous procedural and substantive errors in the Agency's case. We were on June 29, and remain today, convinced that the original EPA support documents do not provide the substantial evidence required for the Agency proposal to be sustained on judicial review. Whether or not that assessment is correct now appears moot, however, because EPA admits that it is completely redoing its case.

As revealed during cross-examination, EPA has embarked upon a far-reaching fact-gathering exercise designed to replace each and every one of its January 29 support documents. Attachment I lists the new contractor studies, surveys and updates currently underway.² All of the listed projects were initiated after the January 29 date of proposal; some were initiated even prior to EPA's receipt of public comments on June 29.³

4 AIA/NA and AI assume EPA will be correcting the overestimate of mesothelioma risks by 33% first brought to light during their cross-examination of agency witnesses.

5 We note that ICF, unlike the former EPA exposure contractor, will be using methodology relied upon in 1984 by OSHA's contractor in its recent asbestos rule-making and advocated by Dr. Bragg. AIA/NA's and AI's expert witness in their June 29 filing. Again, there is no reason EPA could not have considered the 1984 work done by OSHA's contractor when it issued its January 1986 proposal.

6 As late as the close of testimony on October 21, 1986, AIA/NA and AI had hoped that it would be possible to proceed simply by reserving their rights to submit additional comments and to cross-examine additional witnesses as EPA slowly but surely developed a new case. We do not waive those rights, but, for the reasons outlined above, we now are persuaded that continuation of the proceeding based on EPA's January 29 proposal and background documents is contrary to TSCA and the Administrative Procedure Act. Nor do we waive our information requests raised at the hearing, to the extent EPA intends to continue to rely upon the requested information.

7 See our June 29 Opening Comments at 101.

The new work under way concededly revamps every facet of EPA's case:

— **1. The potency of asbestos:** For the first time, EPA is exposing its potency case to review by outside experts other than the single person previously consulted. In addition, a contractor, ICF, is reevaluating the model EPA is using to predict health risks.⁴

— **2. Current exposures to asbestos:** ICF is contacting experts in industry, academia, labor and government to assess occupational exposure. ICF will "quantitate" exposure and estimate releases for numerous industrial sectors.⁵ Versar, another contractor, similarly will reestimate all non-occupational exposures.

— **3. Risks of materials used in lieu of asbestos:** EPA announced during cross-examination that it will no longer rely on its April 1985 "substitutes" document. Instead, EPA has commissioned at least **five new studies** of the risks of substitutes.

— **4. Economic effects of regulation:** ICF is collecting current price-quantity data from asbestos manufacturers. With such data, EPA will update its cost-of-regulation model and develop a new model for forecasting asbestos uses. Another contractor, PEI, is collecting data, for the first time, on the costs of switching to non-asbestos production. EPA contractors also are for the first time examining whether eliminating asbestos in brakes is "feasible" and whether brake effectiveness will decrease. The explicit goal of these projects is a new regulatory impact assessment.

— **5. Less burdensome regulations:** For the first time, EPA is quantifying the costs and benefits of alternative means of controlling asbestos exposures.

By these actions, the Agency acknowledges that it is no longer relying on the support documents released with its January 29 proposal. Consequently, the factual support that must accompany a legally sufficient notice of proposed rulemaking no longer exists here. Moreover, under these circumstances, further public participation is effectively precluded unless and until EPA specifies in a new proposal: (1) its new findings, (2) the factual bases on which they are made, and (3) what course of action EPA believes is indicated by the new data and findings. Until that is done, the rights of AIA/NA and AI to submit additional comments and evidence and to cross-examine additional witnesses cannot properly be exercised.⁶

AIA/NA and AI have been concerned from the outset with the deleterious effects EPA's proposal is having on their members' businesses.⁷ This concern is greatly compounded by the fact that EPA issued a proposal that it knew was based on concededly outdated (and sometimes admittedly incorrect) data. When EPA is in the process of developing a new case and no one knows what that case will show, it is manifestly unfair for EPA's January 1986 to remain officially pending.

⁸ Because withdrawal is legally required, this letter constitutes notice to EPA pursuant to 15 U.S.C. § 2619 (a) (2) and (b) (2) by the Asbestos Information Association/North America, 1745 Jefferson Davis Highway, Arlington, Virginia 22202 (703-979-1150), its members, and the Asbestos Institute, 1130 Sherbrooke Street West, Suite 410, Montreal, Quebec, Canada H3A 2M8 (514-844-3956).

ALA/NA and AI have emphasized repeatedly the need for EPA to determine promptly whether and how it should regulate asbestos uses. The withdrawal suggested here would not jeopardize that objective. To the contrary, issuance of a new proposal would focus the decision-making process on the material issues and guarantee effective public participation in any rulemaking. The Agency's decision to commission a new set of support documents has already erased EPA's previous commitment to conclude the proceeding by the Spring of 1987. Indeed, EPA acknowledged at the hearings that a final rule will issue no earlier than October 1987 and its Regulatory Agenda lists December 1987 as the anticipated completion date. Withdrawal of the pending proposal, subject to a possible new proposal, need not interfere with that completion timetable.

For all the reasons suggested above, EPA's January 29, 1986 proposal is effectively dead. TSCA mandates its withdrawal.⁸ AIA/NA and AI will shortly request a meeting with EPA Administrator Thomas to explain our position more fully.

Sincerely,

Edward W. Warren p.c.

Edward W. Warren

Counsel for the Asbestos
Information Association/
North America and the
Asbestos Institute

EW: jycs

cc: Lee Thomas
Edwin Meese III
Frank Blake
Charles Elkins
Docket Office

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Attachment I

List of ongoing EPA projects to replace its January 29 background documents

In an effort to satisfy the requirements of TSCA section 6 its implementing regulations, EPA's January 29 proposal relies upon four background documents that describe: (1) asbestos' carcinogenic potency, (2) exposure to asbestos, (3) the risks of substitutes, and (4) economic costs of a ban and phaseout. The Federal Register preamble itself purports to discuss regulatory approaches other than ban and phaseout schemes considered by the Agency.

After January 29, and even prior to the close of the public comment period on June 29, EPA embarked on a comprehensive program to replace these documents. The following list sets forth the projects to rewrite the Agency's case. Attached are the work assignments, outlines and memoranda that define these post-proposal efforts. In sum, EPA has engaged at least six contractors to carry out at least then discrete projects at a cost of many hundreds of thousands of dollars.

— A. The Potency of Asbestos

1. ICF is reevaluating the model that predicts health benefits (Attachment A).
2. EPA will be sending written questions on carcinogenic potency to asbestos experts. See Letter from M. Winer to Asbestos Hearing Participants (Sept. 22, 1986).

— B. Current Exposures to Asbestos

1. ICF is reviewing data on occupational exposure. Cross-Examination Transcript ("Tr.") at 160 et seq. (October 7, 1986) (Attachment B). ICF will:

- A. *contact experts in industry, academia, labor and government.*
- B. *review publications.*
- C. *assess the effect on exposure of OSHA's new PEL.*
- D. *"quantitate" exposure for non-manufacturing uses of V A tile, A/C pipe, roofing felt, gaskets, and friction products.*
- E. *estimate air releases.*

2. Versar is revising the non-occupational exposure case. Tr. at 162 et seq. (October 7, 1986) (Attachment C). Versar will:

- A. *estimate population size, exposure intensity, and exposure duration for consumers, building occupants, persons living near plants and other point sources, and persons exposed to brake wear dust.*
- B. *rely on the asbestos NESHAP review and literature searches, as well as previously submitted comments.*

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3. The EPA Economics and Technology Division ("ETD") is determining which products currently contain asbestos. Tr. at 163 (October 7, 1986).

4. EPA is "reevaluating" the "whole [floor tile] exposure scenario." Tr. at 223 (October 7, 1986).

— C. Risks of Materials Used in Lieu of Asbestos

1. Life Systems, Inc. had prepared a draft hazard assessment for non-asbestos materials, dated August 25, 1986, but EPA already has concluded that document is not acceptable. Tr. at 989 *et seq.* (October 17, 1986).

2. Dr. Vu is writing a new non-asbestos fiber hazard assessment. *Id.* at 991-92.

3. Dr. Vu also is preparing an analysis of general toxicological principles relating to fibers. *Id.* at 993.

4. ICF has written a non-asbestos fiber exposure assessment. *Id.* at 995-96 (Attachment D).

5. EPA's Office of Air Quality Planning and Standards is evaluating non-asbestos fiber toxicity. Tr. at 1015-16 (October 17, 1986).

6. Dr. Rench has reviewed epidemiological data on asbestos substitutes. *Id.* at 984 (Attachment E).

7. The American Society of Mechanical Engineers ("ASME") and Battelle will evaluate whether non-asbestos brakes are as safe as asbestos brakes (Attachment F).

— D. Economic Effects of Regulation

1. ICF is developing new production and price information (Attachment G), including: ■

A. *updates of the 1981 TSCA section 8(a) survey production data. In so doing, ICF is conducting an extensive phone survey (Attachment H).*

B. *price and availability of substitutes. Tr. at 480 (October 9, 1986).*

C. *price-quantity relationships for asbestos fibers and products.*

D. *brake production. Id. at 481.*

2. With such information, ICF will (Attachment G):

A. *update the cost-of-regulation model. Tr. at 479 (October 9, 1986), and assess community impacts.*

B. *develop a new model for forecasting asbestos use.*

■ ETD's

review of products that actually contain asbestos, *supra* number 3, also will be relevant to the economics case

-
3. PEI is studying the cost of converting "asbestos-using capital to other uses." (Attachment I). PEI is conducting a phone survey to determine the type of equipment used to manufacture asbestos-containing goods, equipment replacement costs, and whether that equipment can be converted to other uses. See also Docket Entries 1485-1530 (survey responses); 1531-1556 (plant site reports and telephone logs).
 4. The ASME/Battelle report, *supra*, will also analyze the feasibility of substituting for asbestos in brakes.

- E. Less Burdensome Regulations

1. EPA is quantifying the costs and benefits of alternative regulatory approaches. Letter from M. Winer to Asbestos Hearing Participants, Appendix A (September 22, 1986).
2. The Agency also is considering new alternatives. Tr. at 912-13 (October 15, 1986).

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APPENDIX III

■ Press release

Scientific Community Unanimous in Denouncing the Banning of Asbestos as Formulated in the EPA's Proposed Rules

Montreal, April 22, 1986. – The scientific community is shocked by the methodology used by the U.S. Environmental Protection Agency (EPA) in recommending a total ban on asbestos in the United States. The EPA recommendation is at odds with the findings of the most recent scientific studies on the subject. In addition, the substitute products suggested by the EPA could involve new, as yet unknown health hazards.

These conclusions are derived from analyses done on the EPA document by 12 researchers from Canada, the United States, France and Great Britain. Their reports were made public today by the Asbestos Institute during an information briefing devoted to a review of the EPA's proposal to ban asbestos.

The scientists consulted by the Institute include university researchers and professors, epidemiologists, toxicologists and specialists in biostatistics, biomathematics and environmental sciences. All are highly regarded for their work on the biological effects of asbestos.

A suspect scientific basis

The experts' initial observations dealt with the scientific data cited by the EPA to support its proposal. They are unanimous in stating that the report of the American agency contains major deficiencies from both the scientific and methodological viewpoints.

Thus, Drs. J. Corbett McDonald and Alison A. McDonald of Montreal's McGill University feel that the authors of the EPA report "have in fact presented a "worst estimate" of the risk by citation of selected and biased evidence".

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Professor Alain-Jacques Valleron and Dr. Guy Thomas, both associated with the Université de Paris VII, say that the EPA report does not meet any of the universally recognized scientific standards and that "using the conclusions of this type of report for regulation purposes would seem to be abusive".

"Crude guestimates"

Professor Jack Siemiatycki of Montreal's Armand-Frappier Institute asserts that "the estimate of risk by the EPA is based on crude 'guestimates'. In this light, the Montreal epidemiologist says, "the proposed ban on asbestos would be something of an expensive gamble".

In a highly detailed analysis of the EPA document, Professor Arthur M. Langer, associate director of the Mount Sinai Medical Center's Environmental Sciences Laboratory in New York points out that the environmental data used to support the agency's position "are not that good". Notes Dr. Langer: "The statement that asbestos has been studied most often and 'thoroughly' for its effect on humans suggests to the reader that these data are unassailable. This is simply not the case".

"Obscure references"

Doctor John C. Gilson, who until recently was director of the Medical Research Center of the Pneumoconiosis Unit in Penarth, Great Britain, believes that "the EPA has not made a convincing case for banning all asbestos". Finally, professor Patrick Sébastien of McGill University's Occupational Health Department agrees with virtually all of the specialists consulted, who have pointed out that the report of the American agency contradicts the majority of the most extensive studies carried out on this subject around the world. Professor Sébastien deplores the fact that the scientific references in the document "come from obscure studies".

Different types of asbestos

In their evaluation of the EPA report, the experts are unanimous in criticizing the EPA for not making a distinction between the various types of asbestos.

For Dr. J.M.A. Davis, head of the Pathology Department of the Edinburgh Institute of Occupational Medicine in Great Britain, this approach "ignores a vast amount of epidemiological evidence that chrysotile is a much safer material than the amphiboles".

In the same vein, the McDonalds reject the idea that all fibres have the same biological effects and confirm that this postulate "is at odds with majority scientific opinion throughout the world".

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Professor Langer, who also disagrees with the EPA's attempt to group all types of asbestos together, believes that "chrysotile asbestos should be permitted in the manufacture of vinyl asbestos tiles, friction products and asbestos cement pipe". The New York scientist, who emphasizes that the use of chrysotile asbestos must be subject to rigorous controls in the work environment, is nonetheless in favour of banning crocidolite and amosite.

The dangers of substitution

The EPA proposal to systematically replace asbestos with various substitute products is unanimously criticized by the 12 experts consulted.

For example, Professor F.D.K. Liddell, of McGill University's Epidemiology and Biostatistics Department, finds no justification for the EPA's numerous assertions that the replacement products would be safer than asbestos. "Using market forces to encourage the more rapid development of substitutes is hardly a guarantee of the safety of the substitutes".

Dr. Raymond Bégin, head of the Pneumology Department of the University of Sherbrooke's Hospital Centre, points out that the biological effects of the substitutes proposed by the EPA have not yet been adequately evaluated and that "several of these materials may well be at least as biologically active as asbestos".

Professor Siemiatycki says the theory that substitute products would pose less risk than asbestos "may not stand up to scrutiny". Professor Siemiatycki also noted that "studies of workers exposed to man-made mineral fibres in the U.S. and in Europe may be interpreted as showing risks of lung cancer comparable to those seen with asbestos."

According to Dr. Davis of Great Britain, "present knowledge suggests that any fibrous product that has fibres of the same dimensions as asbestos and the same fibre durability in lung tissue will be equally hazardous."

Potentially carcinogenic products

Professor Langer of the Mount Sinai School of Medicine, who has analyzed the preliminary tests carried out on a half-dozen products proposed as replacements for asbestos, points out that these tests have shown that the products in question are potentially carcinogenic.

Professor Sébastien believes that "it is unwise in terms of public health to propose several mineral fibres to replace asbestos in its multiple uses. In fact, that would only compound a variety of uses with a variety of pollutants, making the situation even more difficult to control, both on the level of industrial hygiene and of the environment."

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Because of the many uncertainties involved in the use of substitute products, the experts recommend that these products be subject to regulations and standards that are as strict as those imposed on asbestos.

A questionable cost/benefit ratio

Although not all of the experts touched on the EPA's analysis of the cost/benefit ratio in banning asbestos, those who have examined it generally tend to question its validity.

Dr. Gilson feels that the EPA has not provided sufficient information to establish the cost elements: "The EPA give us no information on the reliance to be placed on the cost figures". According to the McDonalds, to claim that preventing cancer deaths saves money is almost certainly untrue: "If economic arguments are used, they should be correct."

The McDonalds point out that "several asbestos products are primarily concerned with safety. Does EPA have the authority to require that alternative products meet precisely the same specifications or better? If not, the proposed rules could have a net adverse effect on health."

In the opinion of Professor Liddell, the cost of replacing asbestos is "astonishing". According to the method of calculation used by the EPA, this would involve an investment of \$2 billion to prevent 1,000 fatal cancers, or \$2 million for each case.

Professor Siemiatycki feels that the price they want the American public to pay is disproportionate to the results they hope to achieve: "From a public health viewpoint, more lives and years might be saved by investing in anti-smoking campaigns, anti-alcohol campaigns, transportation safety or other public measures."

"Controlled use of asbestos"

Along with many of his colleagues, Professor Langer rejects the notion of banning asbestos as proposed by the EPA: "Can a resolution be achieved to protect the general population and still use asbestos safely? I think yes. By elimination of amphibole asbestos, banning of cigarette smoking in specified buildings, structures, and workplaces, workplace controls and workpractices, and use of safe substitutes, this can be achieved."

Dr. Robert Murray of the London School of Hygiene and Tropical Medicine in London, England, who is also president of the International Association of Occupational Medicine, finds that the EPA proposal is an unjustified action "which borders on almost obsessive paranoia". Noting that society has learned how to control many dangerous industrial substances such as phosphorous and carbon bisulphite without having to ban them, Dr. Murray suggests adopting a similar approach to asbestos, "whose risks can be controlled".

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APPENDIX IV

■ Letter to
Ambassador Thomas M. T.
Niles

Montreal, June 6, 1986

His Excellency Thomas M. T. Niles
Embassy of the United States of America
100 Wellington Street
Ottawa, Ontario
K1P 5T1

Excellency,

Re: EPA's Proposed Rulemaking on Asbestos

The Asbestos Institute considers the proposed rulemaking of the U.S. Environmental Protection Agency (EPA), to ban and phase out the use of asbestos in the United States, to be excessive and unjustified on health grounds. In order to avoid further distortions in international trade and trade relations, consideration should be given to the immediate withdrawal of the proposed rule.

The Asbestos Institute is jointly funded by the Governments of Canada and Quebec and the Canadian asbestos mining industry. It is a privately managed organization with representatives from industry and labour comprising the Board of Directors. The prime objective of The Asbestos Institute is to promote the safe use of asbestos worldwide.

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It is the position of The Asbestos Institute that the approach to asbestos regulation should not differ markedly from that taken on most other potentially hazardous commodities. It should be based on the principle of "controlled use", with worker health and safety safeguarded via the application of rules governing exposure limits, medical surveillance programs, engineering controls and proper workplace practices and procedures. Only where this is not possible (e.g. spraying on insulation), should consideration be given to other measures.

EPA's proposal to ban asbestos outright is out of step with the growing international support for the "controlled use" approach to chrysotile asbestos regulation. Indeed, the "controlled use" approach is consistent with the position of a number of international organizations, including the World Health Organization (WHO), the International Labour Organization (ILO), and the Organization for Economic Cooperation and Development (OECD). Furthermore, this approach is reflected in regulations on chrysotile asbestos in Canada, the European Commission, EEC member countries and most other countries around the world.

The proposed ban of asbestos is based on EPA's finding of unreasonable risk. However, in undertaking its risk assessment analysis, the EPA officials have made a number of assumptions, which tend to ignore the most recent scientific evidence. For example, EPA has failed to distinguish between fibre types and sizes and types of industrial activity in assessing the potential risk of asbestos. Several highly reputable scientists have severely criticized the EPA for these and other short-comings. In general, there appears to be a growing consensus among the international scientific community that EPA's supporting analysis contains major deficiencies both from a scientific and methodological standpoint.

It is noted that the report of The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario (ORCA), which reflects the sworn testimony of the who's who of the international scientific community, concluded that, provided regulations controlling asbestos dust exposure at low levels are properly enforced, the risk associated with chrysotile mining and its major product applications can be reduced to socially acceptable levels.

The Asbestos Institute, therefore, seriously questions the scientific underpinnings of the proposed rulemaking. We also take exception to EPA's simplistic endorsement of asbestos substitutes and the Agency's statement that substitutes do not appear to present as great a potential for risk to human health as asbestos. By taking this position, the Agency is completely ignoring an ever growing body of scientific evidence which indicates that most respirable fibres, whether man-made or natural mineral fibres, are pathogenic when used in uncontrolled conditions. Moreover, EPA is placing workers and the general public in the United States and abroad at increased risk by encouraging the use of substitutes, especially where their production and use may not be governed by appropriate regulations and when these substitutes have not yet been proven safer. At least, in the case of asbestos, the public, industry and the workforce generally know that precautions should be taken.

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Hopefully, we can learn from the past and make every effort to ensure that a tragic legacy of disease does not result from the uncontrolled use of asbestos substitutes. Moreover, if the June 2nd, 1986 Washington Times article, which related the Challenger disaster to regulations on asbestos, is correct, then it is clear that, in order not to compromise worker and public safety, existing products should not be removed from the marketplace until substitute products, with comparable technical performance, have been found and proven.

An increasing number of countries are beginning to recognize the potential danger to worker health and safety resulting from the uncontrolled use of other respirable, biologically active fibres. Indeed, some have already introduced regulation calling for their strict control in the workplace. In addition, the ILO has also recently issued a notice calling for information on the health effects of non-asbestos natural and man-made fibrous materials. Time may prove that all respirable, biologically active fibres should be included under the same regulatory umbrella as asbestos in order to safeguard worker health and safety.

The Asbestos Institute firmly believes that asbestos is essentially an occupational health and safety problem. It is **not** a public health issue, nor does asbestos pose a threat to the general environment. Consequently, we would agree with the position of the U.S. Government, outlined in a letter dated August 16th, 1985 to the Swedish Government regarding Sweden's proposed regulation to ban the import of newly manufactured cars containing asbestos in brakelinings. To quote this letter, "There is no risk to health from asbestos containing brakelinings when they are used as intended and replaced using a recommended procedure such as the wet method. In the U.S., a more flexible approach is taken to regulate the use of asbestos in manufacturing and disposal processes or facilities, rather than to totally prohibit its use. The U.S. government places the burden directly on the source of the problem, by controlling in the workplace the human exposure to materials which may be hazardous to health."

Since asbestos is primarily an occupational health and safety issue, the Asbestos Institute would have expected that the regulation of asbestos would have been left to the appropriate competent authority rather than EPA.

We do not believe that a no safe-level approach to asbestos regulation is reasonable. This approach is in conflict with a growing body of epidemiological evidence which shows no excess incidence of disease with respect to low levels of exposure to chrysotile asbestos in the workplace. Moreover, this approach does not address the fact that asbestos is an ubiquitous mineral found in the general atmosphere, natural water systems and as part of the ore deposits of most mining operations. To illustrate, much of California is situated on serpentine rock, the host rock for chrysotile asbestos. Clearly, it would be impossible to "eliminate any public exposure to asbestos" as proposed by the EPA. As the asbestos in schools issue has clearly demonstrated, such attempts can serve to mislead the general public, create undue anxiety for families and cause wasteful expenditure of large sums of taxpayers' money to address, what are in many respects, trivial risks.

You should also be aware that since EPA began its deliberations some years ago on the asbestos issue, asbestos production in Canada has dropped significantly, as have sales to the U.S. market. Moreover, given that the EPA is not without influence abroad, Canada's exports to other countries have also suffered. Indeed, immediately following the recent publication of EPA's proposed rule in the Federal Register, Carey Canada Inc. announced the closure of its mine in East Broughton, resulting in a further loss of some 250 jobs in the Eastern Townships of Quebec. The record will show that of all chrysotile producing nations, Canada has accounted for most of the decrease in world production since 1979.

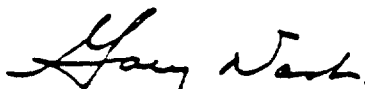
Canadian mine workers have fought hard and long for safe working conditions in Canadian asbestos mines in order to bring an end to diseases associated with past high uncontrolled exposures to asbestos. In this regard, labour has been very successful, in that management responded positively and Canadian mines and mills now serve as models to the rest of the world. It is unfortunate that EPA's shallow approach to asbestos regulation now threatens, not only the important gains made by Canadian labour in the occupational health and safety field, but also the present and future livelihood of Canada's asbestos mining communities.

The economic implications of EPA's proposed ban are not restricted to Canada. Indeed, the entire developing world could suffer severe economic consequences. The Asbestos Institute recently contracted a major study, the objective of which was to compare the socio-economic benefits of asbestos-cement (A/C) pipe manufacture vis-à-vis other competing pipe products, notably ductile iron and PVC pipe. Regardless of the social indicator chosen (e.g. employment, foreign exchange, etc.), A/C pipe outperformed all other competing products, even in those countries which have a domestic petrochemical industry. Moreover, the technology associated with asbestos product manufacturing is widely available and generally straight forward. This too, we believe, is of importance to developing countries. If EPA's proposal were allowed, and many developing countries were to introduce similar regulation, a misallocation of resources would occur, resulting in an economic burden which developing countries can ill-afford at this time.

EPA's proposed rulemaking will only serve to raise significant barriers to trade, distorting international trade and trade relations between many asbestos consuming and producing countries worldwide. Since the proposed ban of asbestos cannot be justified on health grounds, it is contrary to the principles underlying the General Agreement on Tariffs and Trade and the commitment of the United States to free trade. To avoid further damage in the marketplace, we strongly urge that appropriate action be taken to withdraw EPA's proposal immediately, and that the United States actively strive towards the international harmonization of asbestos regulation based on the "controlled use" approach.

I would ask that you please send a copy of this letter and the attachments to the appropriate officials at EPA before June 29, 1986, so that it can be placed on the public record.

Sincerely yours,



Gary Nash
President

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THE ASBESTOS INSTITUTE

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