Thank you Mr. Halas - (Ladies and) Gentlemen

Since this paper was submitted over 3 months ago; and, with all the publicity and attention that asbestos continues to receive, I anticipated that I may have to note some changes in the reprint, perhaps make some retractions. However, to my knowledge, there is no new evidence which would change my basic premise that asbestos can be used safely and it is not the ogre which the general news media would have you believe.

Before I begin, (first slide please) let me call your attention to the March issue of "Plastics Technology". On page 25, in an editorial titled "The Familiar Aroma of Panic", Mr. Malcolm Riley has touched, in general, on many of the points I will make today. The asbestos industry, and the plastics industry, appreciate this type of objective outlook by the news media.

(Next slide -2- please.) Here you see the type of media coverage more generally accorded asbestos during the last 1-2 years. Especially after it was designated a "target health hazard" by OSHA and a "hazardous air pollutant" by EPA. Little has since been done to place the question of asbestos use and asbestos toxicity in logical perspective. Even in Japan. (Next slide -2a-)

If the media chose to sensationalize my presentation you might see the headline shown on the next slide (3). ("CHRYSOTILE ASBESTOS WILL NOT AFFECT YOUR HEALTH"). This could be a true statement; however, if I was being quoted I would have to add the following - (next slide -4-) "UNLESS BREATHED IN EXCESS QUANTITIES FOR MANY YEARS". Note that I said CHRYSOTILE asbestos, an important distinction to be discussed later.

It is accepted that asbestos can cause disabling lung damage, commonly referred to as asbestosis (slide -5-). But it is important to note that asbestosis and statistical excess occurrences of bronchogenic carcinoma, the two most common asbestos - related diseases, have occurred only in workers with massive, long-term exposures to asbestos dust. The next slide (6) shows some operations which could have the potential for this type exposure.

Unfortunately the latter operations have been associated with past negligence and most of what you read is based on epidemiological studies of these workers. Asbestos has been largely removed from the fireproofing application.

(Next slide -7- please) Asbestos functions in plastics. Over 200,000 tons used annually, and over 95% is chrysotile, used in most applications because of plentiful supply and product uniformity. The next slide (8) shows more specifically where asbestos is used in plastics industry. Biggest single use in floor tile, >100,000 tons. Although chrysotile most used, special advantages of other fibers sometimes required. Plastics industry uses small amounts of crocidolite and anthophyllite.

Although we will not dwell on mineralogy, it is important to know that there are several varieties of asbestos, and that there is considerable evidence that some are more harmful than others, especially with regard to development of mesothelioma, a rarely-found cancer of the pleura.

Asbestos is a commercial or generic term used to describe six naturally occurring minerals that are hydrated metal silicates. (Slide -9-) The six varieties are divided into two classes, serpentine and amphibole, based on crystal structure. Chrysotile is the only member of the serpentine class and the amphiboles include crocidolite, amosite, anthophyllite, tremolite and actinolite.

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(Slide -10-) Chrysotile is by far the most used variety of asbestos and accounts for more than 95% of world production. It is the only variety produced in commercial quantities (except for small quantities of anthophyllite in U.S.) in the U.S. and Canada. Also of commercial importance are croc[illegible]ite, amosite and anthophyllite, obtained from Africa and Finland.

In the United States crocidolite is used almost exclusively to reinforce cement pipe. Amosite is used in insulating and packing materials while anthophyllite is used primarily as a chemical resistant filler in plastics. (Slide 10a) Chrysotile is used in over 3000 applications, the largest and most common include: asbestos-cement products, floor tile, asbestos paper, friction materials and gaskets, textiles, plastics, and insulation.

There is increasing evidence that crocidolite and amosite (Slide 11) should be more stringently controlled than chrysotile. Some data indicate that even a relatively short exposure to these amphibole minerals can result in the development of mesotheliomas. A panel of experts in Britain concluded that other types of fiber should be substituted for crocidolite wherever possible. The use of crocidolite in Britain has been severely restricted since 1970 and its importation into the United States and Japan has steadily decreased since the middle 1960's.

Where there is a strong statistical relationship between mesothelioma and the inhalation of asbestos, crocidolite and amosite have been involved either alone or in combination. The insulation worker is also exposed to silica and other pneumoconiosis producing dusts, as well as additional agents and materials in the particular work environment. These coexisting agents, such as coal tar and aromatic hydrocarbons, have been completely ignored in the reported studies of insulation and other workers.

When asbestos exposure has been limited to (Slide 12) chrysotile, as in Quebec asbestos workers, there is ~~strong~~ evidence that no excess mesotheliomas will occur. Additional data, as reported by Dr. J. C. McDonald, show that the Quebec miners have no excess of lung cancer unless they were very heavily exposed (probably to greater than 10 fibers per cc for forty years). Dr. McDonald is Professor of Epidemiology at McGill University in Montreal and has specialized in this field for 25 years. If there is time later we will discuss the chemical and physical differences between chrysotile and the other asbestos minerals.

Within the past year articles have been published about the various hazards from asbestos. One example is in friction materials and to mechanics who blow dust from brake assemblies. The U.S. Public Health Service conducted a study which showed that less than 1% of the 40-50% asbestos in brake linings remains as free fiber after wear. The asbestos is converted by the high heat of friction to a non-fibrous, non-toxic material called forsterite. A study in England found that mechanics engaged in this activity continuously had TWA exposures of 0.68 fibers per cc of air, much less than OSHA's 1976 standard. There is no known study which indicates any hazards to men employed in this occupation or to the general public. NIOSH air samples Daytona, toll booths.

Quoting from an article in the June 7, 1972 issue of the Wall Street Journal: "bits of asbestos used in filters for beverage making have been found in wine and beer, for instance, and could be dangerous if swallowed". A study in Great Britain showed that the total amount of asbestos fiber found in British beer added up to only 0.002 ounces in the total annual production of over one billion gallons. This is equivalent to about five parts per million-million by weight. There is not one shred of evidence that ingesting such small amounts of asbestos is hazardous.

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Many stories refer to Dr. Irving J. Selikoff and his studies at Mount Sinai Hospital. It should be noted that when Dr. Selikoff uses the term "asbestos workers" he is not referring to the men engaged in the general asbestos mining, milling or manufacturing industries. His studies have been on men employed only in the asbestos insulation trade who belong to a union called the "Heat, Frost, Insulation and Asbestos Workers", commonly referred to as the asbestos workers union.

Adverse publicity about asbestos and unfortunate negligence in some asbestos applications ultimately led to action by the federal government.

The Williams-Steiger Occupational Safety and Health Act of 1970 became effective on April 28, 1971 (Slide 13). Based on congressional mail this law has stirred up more confusion and controversy than any other recent legislation. In spite of the interest it is estimated that 30% of the nation's employers are not aware of the law's existence and many others have no real idea of what it is all about.

The Congressional purpose of the Act is:

> "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources."

(Slide 14) The Act established the Occupational Safety and Health Administration (OSHA) within the Department of Labor, which has responsibility for administration and enforcement. Research and related functions are handled by the Department of Health, Education and Welfare (HEW) through the newly created National Institute of Occupational Safety and Health (NIOSH).

Most of the controversy originally surrounding OSHA was related to safety rules and the safety-oriented target industries program. Early efforts were aimed at eliminating hazards in the five industries (Slide 15) whose safety record was especially bad:

- Longshoring
- Meat and Meat Products
- Lumber and Wood Products
- Roofing and Sheet Metal
- Mobile Homes and Other Transportation Equipment

In a news release issued January 4, 1972, OSHA announced a Target Health Hazards Program (Slide 16) to parallel the Target Industries Program. The new program is aimed at improving health factors associated with working conditions. It was initiated by naming five substances to be the focus of initial and concerted efforts by OSHA and NIOSH:

- Asbestos
- Cotton Dust
- Silica
- Lead
- Carbon Monoxide

Prior to this announcement, on December 7, 1971, (Slide 17) an asbestos emergency standard was set at 5 fibers per ml. This replaced a prior threshold limit value (TLV) of 12 fibers per ml. originally established by the American Conference of Governmental Industrial Hygienists (ACGIH).

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Continuing from the OSHA news release of January 4, the next slide -18- is a summary of the specifics on the five target substances:

Substance	Can Produce	No. Employees At Risk	Industries
Asbestos	Asbestosis, Cancer	200,000	Insulation, Ship building, construction, etc.
Cotton Dust	Byssinosis	800,000	Cotton Processing-all types
Silica	Silicosis	1,100,000	Abrasives, mineral processing, sand-blasting, etc.
Lead	Severe nervous system disabilities	1,600,000	Ammunition, paint, battery, auto, etc.
Carbon Monoxide	Brain damage, death	Uncountable Thousands	Metal processing, users of gasoline-powered equipment

At the present time, new standards have been established only for asbestos.

A new Standard for (Slide 19) Exposure to Asbestos Dust was published in the Federal Register, Volume 37, No. 110 on Wednesday, June 7, 1972. May be new issue in 10-12 months. Copies of June 7 available. The basic exposure standard is an 8-hour time-weighted average (TWA) of 5 fibers, longer than 5 micrometers, per cubic centimeter of air. The fiber limit is to be reduced to 2 on July 1, 1976. A peak concentration of 10 fibers per cc is not to be exceeded at any time. All of the fiber concentrations are those to which an employee may be exposed without protective clothing or equipment.

(Slide 20) The first basic requirement of the new standard is monitoring to determine whether or not fiber concentrations are in excess of the exposure limits. Some asbestos suppliers provide a monitoring service to customers and several insurance companies have personnel trained in fiber counting. Many service companies have been formed and inexperience has resulted in several instances of inaccurate and misleading results. NIOSH sponsors training schools and each session is filled to capacity.

Improper interpretation of the regulations has created many misconceptions about the equipment and procedures needed to use asbestos. If exposure limits are not exceeded, there are no further compliance requirements except for medical examinations. Interpreted literally, medical examinations are required for all employees in an "occupation exposed to airborne concentrations of asbestos fibers". Some definition of "exposed" is necessary since evidence indicates that small amounts of asbestos fiber have existed in the atmosphere for millions of years. The source of these fibers could be from the weathering of naturally occurring surface outcrops (Slide 21). In its criteria document on asbestos, NIOSH recommended that "exposed to asbestos" be defined as "average exposures above one fiber per cc or peak exposures above five fibers per cc".

(Slide 22) Respirators and special clothing are required in the construction trade for the spray application of insulation and fireproofing materials, and for the removal of such materials. This special protection is not required for any other use of asbestos unless exposure limits are exceeded. This is also true for other items such as specially equipped tools, product limitations, change rooms, clothes laundering and waste disposal.

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Union Carbide trial exhibit UC-1434: Speech Text on the Safe Use of Asbestos in Plastics, with Slide Cues and Aud... Published by AsbestosClaims.Law
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Caution labels are required on products containing asbestos except where the fibers have been modified by a bonding agent or other material to prevent dusting during any ~~normal~~ subsequent use or handling. Besides raw asbestos (Slide 23) fiber, products which require package labeling could include: dry acoustical spray products and joint cements, unsaturated roofing felt and textiles, various insulating products made without adequate binders. The labeling of a product does not prohibit its use.

Although the list could be practically endless, (Slide 24) products containing asbestos and not requiring a label could include: reinforced plastics (phenolic, nylon, polypropylene, polyester, etc.), roofing compounds, floor tile, reinforced rubber, ready-mix joint cements, flooring, coating and adhesives (polyester, epoxy, urethane, casein, etc.), paint (PVC, alkyd, acrylic latex), mineral board, lubricants and greases. 92% of total U.S. asbestos is "locked" in.

Dust counts have been taken on a regular basis in most asbestos operations for years. With new and better counting techniques, pelletized asbestos, wet processing, and improved operating conditions, many industries are finding that OSHA compliance presents no major problem. (Slide 25) In many cases dusty conditions are being caused by other raw materials. The problem becomes one of nuisance dust control not a lengthy and usually unnecessary program to "get rid of asbestos". One large chrysotile asbestos user is now receiving pelletized asbestos in bulk hopper cars containing about 95 tons of product. With appropriate storage, transfer, and ventilation equipment, there is no asbestos dust released to the work or public atmosphere. The asbestos pellets flow freely from the car and there is no residual material. Plastic bags, repulpable paper bags and "automatic opening station" are other means used to preclude dust generation. Samples of Pellets.

More is probably known about the potential health hazards of asbestos and the proper means for controlling or eliminating them than would be the case with possible substitute materials. It would be imprudent to use unproven materials, whose health effects are unknown, to replace asbestos which has proven its usefulness for the past 100 years.

(Slide 26) Chrysotile is set apart from the amphibole minerals by its positive surface charge, softness, flexibility, and low refractive index. Its fibril diameter is less than 0.03 micron, the smallest among commonly known fibers, and it has exceptional mechanical strength. (Slide 27) Wet processing of chrysotile has permitted chemically modified products with (Slide 28) surface properties similar to pyrogenic silica for use in antisag and thixotropic applications. Compared to chrysotile, amphibole fibers are larger in cross-section, harsh, and hard. They are anionic in surface charge and more resistant to acids.

(Slide 29) Asbestos has been, is, and can be used safely in the plastics industry as well as most other areas of application. It is an important and necessary raw material and its use cannot and should not be prohibited. Medical, industrial and governmental personnel must continue to work together to establish reasonable exposure limits while, at the same time, providing safe work areas for employees.

(Slide 30) Chemical and physical properties of asbestos types.

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ACL Doc 16566 · Page 5 of 6 asbestosclaims.law/library/16566/5

QUESTIONS - 1) Does asbestos present hazard to public? - I quoted the National Academy of Science statement and stated firmly that there was considerable evidence from many sources that the general public was in no danger from asbestos in air or water.

2) Are you criticizing Dr. Selikoff's work or presenting contrary evidence? (This question was asked in different ways by several.) - I answered with an emphatic no, but pointed out that his reports were based on studies on a very limited group of workers, none of whom were exposed only to chrysotile which accounts for over 95% of U.S. asbestos consumption. I further stated that my criticism was of the news media for the way they reported Dr. Selikoff's work and for many people who blindly believe that asbestos should be done away with.

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