PLAINTIFF'S
EXHIBIT
AIA-59

Asbestos Information Association

North America

Second Annual

Industry — Government Conference

Mayflower Hotel *Washington, D.C.*

September 10 — 11, 1975

ASBESTOS INFORMATION ASSOCIATION
1660 L Street, N.W., Washington, D.C. 20036

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FOREWORD

The Asbestos Information Association/North America held its 2nd Annual Industry-Government Conference, September 10-11, 1975. The Conference was preceded by the Annual Meeting of the Association. The events were held in the Mayflower Hotel, Washington, D.C.

The annual conferences provide a forum for review and analysis of the problems associated with asbestos in the workplace and the community environments. Discussions are concerned with regulations and the procedures and techniques employed for the safe use of the important mineral to satisfy the requirements for its application in numerous essential products. The 1975 program took on particular importance as the industry looked to the July 1, 1976, implementation of the Occupational Safety and Health Administration's permissable asbestos exposure level of a maximum two fibers per cc of air in the workplace.

A total of 130 persons attended the 1975 Industry-Government Conference. In addition to AIA/NA members and Federal regulatory agency officials, attendees included representatives from British, Canadian and French asbestos information associations; U.S. asbestos product oriented associations; organized labor; consumer interest groups; information media; and international asbestos companies.

The Association greatly appreciates the presence and remarks of the program participants. Each made a significant contribution to the continuing dialogue on asbestos-health relationships and the importance of the unique mineral to our economy.

R. H. Mereness
Executive Director
Asbestos Information Association/North America

April 1, 1976

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Remarks by Roy E. Albert, M.D.
Deputy Assistant Administrator for
Health and Ecological Effects
Environmental Protection Agency

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Dr. Albert is Deputy Assistant Administrator for Health and Ecological Effects, Office of Research and Development, Environmental Protection Agency.

He is a graduate of New York University College of Medicine. Prior to joining EPA, Dr. Albert was Professor of Environmental Medicine at the Institute of Environmental Medicine at New York University Medical Center.

Dr. Albert is a member of a number of National Academy of Sciences-National Research Council advisory committees. He has authored or co-authored over 60 papers and articles on various medically related topics.

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It is a pleasure to be here and talk to this group. You are all obviously here because of asbestos and one of the major reasons for the concern with asbestos is the evidence for its carcinogenic action. The Environmental Protection Agency is groping for a policy in the handling of carcinogens in the sense of establishing some uniform way of dealing with the regulation of environmental carcinogens. Consequently, the thing that I want to talk about is some of the considerations that go into the development of a policy for handling carcinogens.

It's self-evident that humans have had to live with dangerous materials for a long time, undoubtedly going back to the discovery of fire. Those dangerous materials are an essential part of the fabric of man's life which he can't get rid of. It's relatively easy to evaluate the procedures that are required to control materials when the effects that are produced occur acutely because there obviously is a small interval between the onset of exposure and the effects, and it's easy to link the cause and effect. The real difficulties arise with agents that produce effects which are delayed for long periods of time. There are many examples of this: one of the earliest ones is the problem of control of silicosis in mines and quarries and this has been a subject of intensive study for many, many years. One of the striking observations in the control of dust, in relationship to silicosis, has been that as the levels have been reduced the time required for the development of the disease process gets lengthened out. So that we have an important time factor in

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gone on for a period of time, even as long as 15 years, are still not adequate to demonstrate the lack of effect of ne agents because it is characteristic of some carcinogens that the effects can extend as long as 20-30, and even 40 years. This is the particular problem on the question of whether or not ingested asbestos in drinking water is a hazard of particular concern in the Duluth area where tailings of the Reserve mining operations have been put into Lake Superior. Still another consequence of the long latent period is essentially forcing the institution of preventive measures long before any possibility of cancer is manifest. One simply cannot sit back and wait until the definite evidence is in that an agent is carcinogenic before taking preventive measures. Obviously, this course of action would be too late. This is also related to the general characteristics of agents which produce cancer, that is, they are to a large extent irreversable. Once the effect has been produced, exposure has occurred, the machinery has been set in motion, and it proceeds even without further exposure. Although further exposure will increase the probability of development of cancer and shorten the time left for the appearance of cancer.

Historically, all the evidence we have for cancer induction in humans arises from situations where exposures have been very large. Much of this comes from occupational exposure. There is also some from medical use of drugs and physical agents such as x-ray. There is also the outstanding example from natural sources, namely sunlight and skin cancer. The skin cancer - sunlight story

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consideration of hazards from agents that produce cancer.

The same property holds true for agents that produce cancer. Namely, with continuous exposure the lower the level, the longer the time required to produce cancer. In fact, this had led to some speculation that, perhaps, there is a true threshold for effect in a sense that if the exposure is low enough, the time required for cancer induction would be longer than the natural life span. In any event, the long interval between the beginning of exposure and the appearance of disease, such as cancer, has led to several peculiarities in the recognition and handling of cancers caused by environmental agents.

In the first place, there is real difficulty in associating cause and effect. For example, in the case of the famous group of radium dial painters, that tipped the brush on their tongues in order to make a fine point, the interval between their painting of radium dials and development of bone cancer was such that they were initally out of the legal bounds of recognition of this condition as associated with the cause. Consequently, they were not entitled to compensation. Thus, there is the problem of associating cancer with a causal agent because of the long time frame necessary for its production.

Another consequence of this long latent period is studies which show that there isn't any association or any increase in cancer upon exposure to an agent, such as asbestos, in which the exposure has

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I think provides a very good illustration of another problem that is associated with the control of carcinogens and that is the large range of susceptibility in human population. Skin cancer from sunlight is the white man's burden. It is essentially of negligible importance in heavily pigmented people and even amongst caucasians there is a tremendous range of sensitivity in that persons with freckles, red hair, are unusually suspectible in comparison with other whites. This ranges even out as far as disease states which have specific deficiencies in the ability to repair damage from sunlight. There is a continuous spectrum of susceptibilities to this carcinogen, ultra-violet radiation, which ranges from virtual insensitivity to extraordinarily high sensitivity. Extraordinarily high sensitivity increases with decreasing numbers of people. That is, smaller and smaller numbers of individuals show higher and higher sensitivity. Namely, does one protect the ultimate in sensitivity to environmental agents or does one try to strike some sort of balance.

Occupational exposures to carcinogens have a very long history, going back to the Middle Ages. The miners in a particular part of Bohemia had something that was known in the 1400s as mountain sickness. This turned out to be lung cancer from radioactive gas. Fifty percent of these individuals died of lung cancer. The early x-ray workers, the people that developed the techniques for use of x-ray tubes, had a tremendous incidence of skin cancer and leukemia because they took absolutely no precautions in handling x-rays.

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workers in the dye industry have shown a tremendous incidence of blatter cancer because here again no precautions were taken. I mentioned the radium dial painters who ingested grams of the paint, and played around with it by painting themselves up so they would glow in the dark. In my own experience, it's almost traditional that, if an agent is not known to be dangerous, it is regarded as completely safe and the tendency is to not pay any attention to the control of it. One of my first experiences in studies of occupational groups was to me a spectacular one. It involved a study of a rare earth company in Chicago that was actually separating rare earth from thorium. They had great piles of the various forms of rare earth, e.g. cerium and lanthanum, etc. Some of them were brilliant yellows and brilliant purples, and they were shovelling them around. The air was full of these spectacular pigmented materials. I must say that it didn't impress me as something not to do at the time. I didn't know there was anything wrong with the rare earths, and I'm not sure that there is. But I mention this to indicate that there has been a tradition in industry of essentially ignoring what would be just normal housekeeping procedures. Much more recently, I had an opportunity to study a plant that is producing what has turned out to be a very nasty lung carcinogen, bischloromethyl ether. In one of these plants, the reaction vessels had a canopy hood over it which was no bigger than a derby which, I think, was inadequate to draw off the smoke from a 10¢ cigar. What happened was, when they added the materials to the reaction vessel, tremendous amounts of fumes came off and everybody had to

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run out of the building under these circumstances.

I think that there is a tremendous range of quality in normal industrial hygiene controls in industry. Even today in this advanced day and age, particularly in small chemical companies, there is an astounding disregard for industrial hygiene practices. I just had occasion to visit a small plant down south that manufactures a pesticide. All of the production workers in that plant have signs of poisoning from the pesticide. Thousands of pounds of this material were dumped into the municipal sewer system to the extent that the sewer system was poisoned, hundreds of pounds of the stuff were sent out the stacks and polluted the neighborhood. In the plant itself, the dust was so heavy that by description you couldn't see across the room. Nevertheless, on the drums of the packaged material there was a big label, "DANGEROUS MATERIAL - HANDLE WITH CARE." This sort of blindness, I think, is something that is difficult to understand, except that I understand it as a laboratory man, where one works in a laboratory doing experiments, the whole thrust is to get on with the job and the devil with controls. It's obviously a very bad thing and it seems to me that the experience with cancer in humans has almost completely been, that we know about, under circumstances where not the slightest attention has been paid to the control of the materials which although not known to be dangerous at the time have subsequently proved to be dangerous.

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Now the problem is, how does one set standards for permissible limits of exposure for agents which are carcinogens? This has a long history too and it has developed sort of by rule of thumb. For example, in the area of ionizing radiation, the first radiation standards were developed in the 1920s and the technique used there was to survey 80 hospitals or so asking them how much exposure produced an acute burn of the skin. They got responses which covered a factor of something like 50-100 and they took the median value and said let's use that as the standard for x-ray exposure beginning in the 1920s. Over the years the standard has been reduced gradually for reasons derived mostly from animal studies and a further understanding of the biological effects of ionizing radiation. Most of the reductions occurred during the development of the atomic energy industry which was a wholly government supported function which essentially involved an open purse available for the control of ionizing radiation. There was never any consideration of cost either for the controls or the costs of the products being produced. Within that same period there were two other radiation standards that were developed, independent of this whole body of radiation exposure. One came for bone seeking isotopes and here it was on the basis of about 20 cases of bone cancer from radium of which the question was asked, "What's the smallest amount that's been known to produce cancer?", and let's take a factor of 10 below that. That was the basis for the standard for radioactive isotopes in the bone that still exists today.

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Another thread that was developed is a standard for radioactive gases in the air. Here the experience that I mentioned before in Europe - European mines, the average level was measured and a factor of 100 below the average level that produced 50% incidence of cancer was taken as the standard. Well, it so happened that during WWII this standard was too low. There were a lot of little mines and we needed uranium. For one reason or other the standard was pushed up by a factor of 10, and this has had a disasterous effect because of the tremendous incidence of lung cancer in our domestic uranium mines. Only now have we gone, and not by the same line of reasoning, that wasn't reasoning, it was simply a rule of thumb, but by other routes have we gone back to the original "guestimate" that set the first standard that was not adhered to. I know for a fact that the standard for exposure to beryllium, which produces a chronic inflammatory disease in the chest, was done in a taxi cab on the way to an airport. There were four people in the cab and the question was asked how much should be permitted on the outside of a beryllium plant. Someone came up with a number, and that was the standard.

In terms of setting standards on the basis of animal data, a similar rule of thumb has been taken in which one either takes the lowest level which produces a detectible effect and taking some margin of safety below that, or the level of effect which is the highest level that doesn't produce effect and a safety factor below that. The size of the safety factor is a matter of individual

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personal preference. It can range from a factor of 10 to a factor of 500,000, depending on who is setting the standard. Inherent in the whole business of standard setting has been the notion that there's a threshold of effect. That is, below that level of exposure, nothing happens and you only get into trouble above the exposure level which constitutes a standard. Unfortunately, that is with the piece of mind of those who are trying to develop standards, there has been the accumulation of evidence which suggests that this is not a tenable position when one is dealing with agents that produce cancer. The reason this got started pertains to the field of ionizing radiation in which one of the most important observations was, when you look at the response in terms of mutations that one gets from ionizing radiation against the dose, you get a perfectly linear response. The shape of the dose response is such that it looks as if at zero dose you get zero effect. But any dose that's administered increases the probability of mutations directly proportional to the dose. Since one of the strongest lines of argument for the cause of cancer is in the area of mutations, this has been a strong basis for thinking that there are no thresholds of effect for carcinogens. Furthermore, studies on the cancer response of individuals exposed to ionizing radiation has shown the same kind of dose response as for mutations which further supports that. There isn't a great deal of good quantitative information in humans in terms of measuring the cancer response against measured exposures in many situations. There is very little of it, but one of them happens to be cigarette smoking. This too shows a

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linear type of dose response with no threshold. That means that no matter how little of a carcinogen you are exposed to there is a finite probability of developing cancer in excess of what the risks would be normally. Thus, the whole issue of setting standards takes on another aspect to it because if there is no exposure which can be considered absolutely safe, then one is dealing with exposures in terms of a degree of hazard. The lower the exposure, the less hazard. That's all there is to it. There is always a possible hazard. Consequently, the decision as to where one sets the level of exposure as a standard depends on the weighing of the costs of controlling exposures to a given level against the consequences of that level of risk from cancer.

When I said that EPA is groping for a cancer policy, I'm not talking about the silly point whether there's a question that EPA is in favor of carcinogens or not. But where one is dealing with materials that are not easily dispensed with, one is thrown into the business of trying to develop some weighing between the risks and benefits, the so-called risk-benefit analysis. There have been decisions that EPA has made, particularly with regard to pesticides, that have involved on the order of five that have been banned out of many hundreds. But some of these are important, and there has been a fair amount of agitation that has been developing about this because it is getting into the range where further banning of pesticides (and these are toxic materials -- there is no question about that) is going to get into problems that there

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aren't agents which are readily available as substitutes, both in terms of effectiveness and in terms of cost. So far we haven't reached that and there hasn't been any (I think the decisions to ban the ones that have been banned are readily defensible) but there is an uneasiness in terms of the way the problems are being managed. Namely, from the legalistic standpoint, and what is going to happen in the future.

The situation has been made more complicated by the rapid development of tests for carcinogenic activity, that is cancer producing propensity which are short term tests and which utilize properties of carcinogenic agents which have a high degree of correlation with their cancer producing behavior. One of these I mentioned before, the ability of carcinogens to produce mutations. This played an important role in the acceptance of carcinogens as having a non-threshold type of response. But recently, a number of tests have been developed to examine the mutagenic properties of agents as a screening method for selecting materials which could be carcinogenic. Additionally, there have been tests involving the culture of cells which are treated with agents and which show changes that are of the type seen with cancer cells. The development of these tests has been a necessity because of the time consuming nature of testing in animals which takes years, and is extremely expensive. However, the consequences in terms of how to handle materials which turn out to be positive is just beginning to be felt. One of the interesting situations that has come up is the

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demonstration that the hair dryers that women use are strongly mutagenic. This is a use which women and also men to a considerable extent are going to be loathe to give up. It's economically a very important series of products, and one under these circumstances wonders how to think about this. After all, if an agent shows up as a strong mutagen, one is not very happy about having it around. One may take the very conservative view that anything that shows that sort of activity shouldn't be permitted. The other way of looking at it is well this is just one test, and it doesn't necessarily mean it really is carcinogenic. Thus, one ought to wait for more data before making a decision.

What is necessary here is, and I think it will probably come about, to a more formal extent than it has in the past, is a systematic way of making risk-benefit analyses. These have been done, of course, in terms of looking at the kinds of hazards, magnitudes of the hazards, with respect to cancer production that agents have and looking at the consequences of their being controlled at different levels. This is just a beginning field, and it is an area we are going to see develop in a much more sophisticated fashion. Hence, a sense of coming up with a series of options that, if one controls to this level the consequences are going to be that, both in terms of health hazards and as well as socio-economic impact. The EPA administrator, who has the ultimate authority to make a judgment, will then be able to do this with the optimum amount of data presented to him. But, nevertheless, it should be

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pointed out in terms of closing remarks that all of these estimates have very large degrees of uncertainty to them because they are dealing with things that are difficult to know such as how much cancer is actually going to be produced by very low levels of exposure and even the socio-economic impacts are very difficult to assess with any degree of confidence.

This is going to have an important impact on anybody making a decision about these materials. Also, the frame of mind, the mood and political pressures, have an important impact on these judgments because this is not very different from the way people behave in the sense of how much attention they are going to pay to risks with respect to getting on with what they want to do. In summary, I would say that these are some of the considerations that go into the assessment of cancer hazards and which have to be dealt with by an agency that has a regulatory function. Thank you.

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Remarks of James H. Crowder, Ph.D.

Chief of Regulations Preparation Section, Emissions

Standards and Engineering Division

Environmental Protection Agency

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Dr. Crowder has extensive experience in the environmental research field. During the past four years, he has developed Federal national emission standards for hazardous air pollutants and sewer source performance standards.

Dr. Crowder received his doctorate from North Carolina State University in engineering mechanics and has authored several technical papers.

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I believe it would be helpful for me to give a very brief overview of the history of our national emissions standards of asbestos and also the proposed amendments that are now outstanding. EPA designated asbestos as a hazardous air pollutant in March 1971. A regulation limiting emissions of particulate asbestos material to the outside air was proposed in December 1971 and after evaluation of public comments was promulgated in April 1973. Before promulgation of these regulations, public hearings were held on our listing of asbestos as a hazardous air pollutant. These regulations cover asbestos mills, major manufacturing sources of asbestos, demolition of buildings that contain friable asbestos insulation and fireproofing, spraying of asbestos fireproofing insulation, and also roadways that are surfaced with asbestos mill tailings.

For most of these sources, the basic emission limitation is no visible emission of asbestos particulate matter to the outside air. There are also alternative methods of complying with the regulation. Air-cleaning equipment, primarily fabric filters that conform to the performance specifications contained in the regulations can be used. The regulations do not specify numerical asbestos emission limits for two reasons. First, at the present time, no safe ambient level for asbestos can be identified. By that I mean not even in the sense that we identify so called safe levels for mercury and beryllium when we promulgated at the same time national emission standards for these two pollutants. Second, measuring techniques for asbestos are not, in our opinion, sufficiently developed at the

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present time to the specification of asbestos air emission limits.

We proposed amendments to these regulations in October 1974. These amendments resulted primarily from four studies sponsored by EPA and also from two petitions for review of the initial regulation. These were filed by the Environmental Defense Fund and the National Association of Demolition Contractors. I think the most important feature of these amendments from your point of view is that they extend coverage to all asbestos waste disposal operations. That is, all sources covered under the existing asbestos standard and under the amendments would be subject to these regulations for asbestos waste disposal.

All phases of waste disposal, beginning with the collection of the waste, extending through transportation and deposition at a waste disposal site, and finally even the management of the alternate waste disposal site would come under these regulations. Again, the basic emission limit is no visible emission of asbestos particulate matter to the outside air. And again, there are alternative methods of complying with the regulation. The two that are specified in the standard are: first of all, wetting of the waste and putting the waste into leak-proof containers before depositing at a waste disposal site; and secondly, pelletizing or otherwise pouring the waste into non-friable form before deposition. The waste disposal sites themselves or for active sections of waste disposal site, the alternatives are either the periodic covering of

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the waste with six inches of compacted non-asbestos material or the periodic application of a dust suppressant agent. The alternative methods for inactive sections of waste disposal sites include covering with two feet of non-asbestos material, or combination of a lesser amount of material with a vegetative cover. In the case of asbestos mills, the covering of the disposal site may be with a dust suppressant agent.

The amendments also extend the regulations to the major fabricating sources of asbestos carried out in central shops to two additional manufacturing sources and to larger renovation operations. The field fabrication of manufactured asbestos products, however, is not covered under the regulations or the amendments. The proposed regulations for fabrication operations are similar to those of the existing manufacturing regulation. And the provisions of the proposed renovation regulations are similar to those of the existing demolition regulation. The amendments also contain some revisions to the existing demolition regulation.

Concerning the status of these amendments, we hope to be able to finalize and publish them in the Federal Register within the next several weeks. Hopefully, by October 15 this year. Thank you.

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Remarks of Gordon G. Robeck

Director, Water Supply Research Division,

Municipal Environmental Research Center,

Environmental Protection Agency

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. Robeck is an acknowledged expert in the field of water supply research. Prior to joining EPA, he served for 30 years with the U.S. Public Health Service as a Sanitary Engineer.

Mr. Robeck is the author or co-author of over 50 technical papers and has received several awards from the American Water Works Association for papers published in their journal.

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Ladies and gentlemen, we appreciate this opportunity to share in our progress. We have tried to communicate our intentions and our experimental designs and as well as our results with industrial representatives be they from individual companies as well as from associations of one sort or another. Accordingly, we naturally appreciate this additional offer today.

Basically, our research effort is designed to help develop the information which will determine first of all whether a standard for drinking water is really necessary, and if so, what that limit should be and how best to economically achieve that limit. Be it control in a pipe or removal from natural or man-created situations. Our studies throughout the whole research area, not only water but in air, are designed to assess the sources and determine a good way of measuring them and develop control measures if the health effects people can tell us that ingesting them, in the case of water, and breathing in the case of air, justifies such an action.

The current status of our research is that we just finished fiscal year 1975 and we put about 1.9 million dollars into research. This next year will be about 1.5 million. This has been distributed across three major areas: analytical, treatment, and health effects. The matter of assessing what's in the environment as best we can short of a perfect analytical method, is being conducted outside of our research office - by the office of toxic substances within the Agency. This nearly a half million dollar contract is proceeding

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with McCrone Associates of Chicago. The results should be in this fall or December.

The need for an analytical method was referred to by Dr. Albert in the luncheon period. It has plagued us for not only the last two years we've had intense involvement with this topic of asbestos, but even back into the middle or late 60s when the possible release of fibers in asbestos pipe was an issue. In fact, at that time, I believe, we thought we had resolved the matter, largely because our analytical method was limited in its ability to characterize size and particles, and had a very questionable basis even on the mass basis.

Many of the air pollution problems have stimulated improvement in analytical methods. They have had contractors doing a lot of this work, and they in turn have gradually improved the methods for analyzing fibers in water and in tissue. We have finally accumulated enough instruments and skills to run analysis in Cincinnati very similar to McCrone Associates in Chicago. But the Agency has a specific mission and plan to develop an interim standard method and we hope to do that by September 1976 with the guidance of our analytical people in the Applee Georgia Lab. They in turn will be asking Batelle Laboratories of Columbus to develop a rapid stream for drinking water situations by a contract for $75,000.

We are working with University of Minnesota in Duluth in

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developing ways of gaging the success in removing fibers in the Duluth and Northern Shore communities with a laser beam adaption. It, in other words, is a modification of what we presently use for gross measurements to determine whether a filter should be backwashed. This seems somewhat inadequate and we want to improve it. We cannot, in other words, run a sample through an electron-microscope every shift or every time we want to determine whether the effluent is proper quality.

We also have given the analytical people somewhat of a puzzle in that they don't really know what the target is for their sensitivity. The same, of course, applies to the engineer who has to design a facility to reduce these fibers. In other words, health effects people do not have a really good guide other than, I suppose, what Dr. Albert said, that there is no threshold. At any rate, what we try to do is identify all we can as accurately as possible, and then try to reduce the number of fibers down below that technical limit, which in the case of the science of samples and the equipment we have is roughly 20 to 40,000 fiber per liter. We feel that in Duluth we have been able to accomplish this. We have worked with some contractors who can have developed a synthetic product that will serve as a standard sample.

We also are concerned of course in measuring fibers in fish tissue inasmuch as all of the experiments conducted to determine standards for many constituents in water were performed in Duluth.

This laboratory was established about 10 days ago. As I mentioned, Bob Carton of the office of toxic substances, has got the survey that McCrone is doing for the Agency throughout the environment for all types of media, not just water. This report will be out in December.

We have collected virtually hundreds of samples on interstate water carrier systems as well as in combination with the cardiovascular water quality relationship survey that we are doing with the National Institute of Health. These have shown that only about five or six percent are above a million fibers per liter and about 14% above half-million. We have also noticed, incidentally, when trying to determine places to do pipe pollutant studies in the field, some raw waters were higher than were anticipated. Therefore, we couldn't use that area for a pipe study but we did try to run down where the fibers were coming from.

We have a control or removal technology program going on. The control aspect in a sense is to work with the Asbestos Cement Pipe Producers Association and develop some feel for the direct effect of the water chemistry on the release, or possible release, of fibers from the inside of a pipe. By following a guideline the Association has established for water chemistry, we have pretty well demonstrated that this will certainly minimize, almost prevent, the release of fibers. We have some evidence from field observations where the pH is lower and the water is rather aggressive, not

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stabilized as we say in the water field, that you run the risk of releasing fibers from the cement and it is dissolved out.

In our health effects area, we have several small projects and one large one. We are cooperating on an interagency agreement in which HEW (National Institute of Environmental Health Sciences) is putting about a million dollars a year and we're putting about $100,000 into a joint effort to establish the relationship between asbestos ingestion and production of cancer. We are also trying to respond to industry's comments on that protocol which was originally thought to establish the relationship that I just mentioned. They want to know more about the dose response and the mechanism of entry, the effect of size, and things of this nature. We are attempting to do some contract work by contributing asbestos fibers that are synthetically made at the University of Cincinnati. We have several studies of an epidemiological nature where we are trying to relate mesothelioma production with the content of asbestos fibers in the drinking water particularly as it relates to possible releases from asbestos-cement pipe.

Time is running out, but I want to make sure that we have a follow-up on the Duluth $4-million project that is about to start in that city to demonstrate that fibers can be removed with direct filtration and careful use of polyelectrolytes. Thank you.

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Remarks of Allen Cywin

Director, Effluent Guidelines Division,

Environmental Protection Agency

at

Asbestos Information Association/

North America 2nd Industry-Government Conference

September 10-11, 1975

Mr. Cywin is presently serving as the Director of the Effluent Guideline Division under the Environmental Protection Agency's Office of Water and Hazardous materials. Prior assignments include service as Assistant Commissioner for Operations and Engineering of the Community Facilities Administration and Chief of the Saline Water Conversion Demonstration Plant Program of the Department of the Interior.

A graduate of Rensselaer Polytechnic Institute and a registered Professional Engineer, Mr. Cywin has published over 40 technical papers.

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As with my colleagues, in order to get a perspective on where we are it is well to go back over where we've been as a nation. The country has always been interested in water pollution control, but primarily in terms of municipal sewage. Following WWII, in the Public Health Service, the Department of Defense and other scattered interests throughout the government there was little research and development going on, little technical assistance going on, regarding the control of specific problems with respect to water pollution.

About 1955, Congress started to stir a little bit in this field and passed a public works program to fund $100 million of municipal construction, largely in small communities. This bill was vetoed by President Eisenhower the first time around because it was a public works measure. We hadn't thought in terms of environmental protection. The law was modified and changed and long about 1965 the country in general through the Congress decided to do something about the accumulating and now very visible effects on our nation's streams with respect to the dirt that we were putting into those streams. We had incidences, for example, like the Tiahoga River and the Buffalo River catching fire because of the accumulated oil on them. We had beaches starting to close down because of the high chloroform count and the visible floating scum. And so, Congress passed a law which they hoped that the states would implement and in fact even today the large thrust of implementation of our Water Pollution Control Act is still through the states.

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In the above law, the Congress suggested that the states establish, only after starting discussions at the local level, end uses for all of our surface streams. These water quality standards were subject to federal approval since you might have two contiguous states on the same body of water, i.e. up stream and down stream uses. The idea was, for example, if you set a stretch of the Potomac River for drinking water purposes, but all the people impacting on that particular stretch of water would be constrained to preserve that end use. This became very, very difficult to implement. For one thing, people threatened to move to other parts of the country, or people pointed fingers at each other saying well don't constrain me constrain the other fellow and the end result would be the same. Over months and years of trying to enforce the water quality standards program, in some cases it was enforced and in many cases it was not. The overall national effect was quite spotty.

As this was sinking in on Congress, the environmental movement picked up great steam in the country and the Congress groped for a new way of approaching this. It took them two years to decide, it started out as the Act of 1971 and ended up as the Act of 1972, on a new strategy for controlling national water pollution problems through point sources. That was to have at least a base level for all like point sources throughout the nation. For example, all municipal treatment plants in the country are to comply with the secondary treatment requirements. This is not

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as difficult as it might seem. There are several alternatives for meeting secondary treatment requirements and indeed this has been done. A part of that of course which makes it a little easier, in comparison with industry's problems, is that Congress also authorized considerable billions of dollars to help subsidize these plants.

At the same time the Congress recognized that on a per capita basis on the types of pollutants being put into the stream, on the ability to react and the technology available, that industry probably could do a lot better. And so, the Congress decided that by July 1, 1977, all industrial point source discharges should have a permit. This permit should tell them what they can or cannot put into the stream from their plant, and this permit would meet as a base level, best practical control technology currently available. In other words, the best practices for that particular industry would be applied uniformly for that industry. This idea evolved from an old act that someone on earth had recognized, called the 1899 Rivers and Harbors Act, in which the Corp of Engineers had always had a provision to limit what would be discharged into the streams. The permit program actually started in 1969-70 but by the time the end of 1972 rolled around, and because we were still trying to write permits against the board of quality standards, only about 20 permits had been written. Since that time, tens of thousands of permits have been written based on national standards.

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Our program, the one that I'm specifically involved in, has been the establishment of the national standards. The national standards not only require a certain degree of pollution removal by July 1, 1977, but in order for industry and the nation to know where we are going in order not to obsolete something by a changing standard and in order to set an upper limit for water quality standards we also put out a 1983 standard which by the Act is applying the best available technology economically achievable. We also put out standards for new plants and for those plants that are connected with municipal treatment plants. There are some 300,000 plants in the country of which about 30 or 40 thousand are point source discharges. Most of the rest discharge to municipal treatment plants. Every plant that has a point source discharge to a certain stream should have applied for a permit by this time. Most of the plants should have gotten them.

With respect to how we go about our business of setting a national standard for the entire industry, the Congress advised us to take a look at characteristics within the industry and subcategorize the industry wherever possible. Within your industry, we have put out regulations on building, construction, and paper manufacturing. This includes asbestos-cement pipe, this means the effluent from the plant that produces asbestos-cement pipe, asbestos-cement sheet, asbestos paper, asbestos millboard, asbestos roofing, and asbestos floor tile. We have not identified asbestos as something, in writing these national regulations, as

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something that we would have to zero in on and for whatever reason try to remove it no matter what. We have looked at this as a pollution problem in terms of normal kinds of pollution, e.g. suspended solids, biochemical oxygen demand, chemical oxygen demand, and said that these are technologies that are in practice. They are readily available, you can design, you can build, you can put in place with great assurity by 1977, and this is what they should achieve. We have identified these technologies. We have identified the costs in general to the industry. We have identified the economic impact in general for the industry and obviously certain plants will have done less than others or will have to do more than others. We have identified the energy requirements in connection with all of our regulations. We have put all our thinking, or summarized all our thinking, in a booklet we call the "Development Document" which supports a regulation that we publish in the Federal Register. Also in connection with your industry, we have put out national standards, once again for '77-'83 new sources, for textile coating, solvent recovering, vapour absorption, wet dust collection, dispursion processes for your textile, friction materials and ceiling devices.

There is one other provision of the Act you should know about that the Agency has been slow to implement because there are great difficulties with that section. Under this particular section, we are identifying materials that are toxic to the aquatic bio and set a national standard for those materials which everyone

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in the nation will have to implement within one year. We have only identified nine such materials to date and so we have not promulgated the standards for those because there is great difficulty. We have asked Congress for relief on this by one year. We think we ought to take about three years at least for something like that. We are also kicking around alternative strategies such as those that we put into our effluent standards program with respect to what can technology achieve as a basis for setting these kinds of standards. As the law is written now, we are required ultimately to put things on a toxics list with respect to aquatic bio. Whether asbestos will ever get on this list or not no one can tell you at this time. Thank you.

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Remarks of Joseph K. Wagoner, D.Sc.

Director of Division of Field Studies & Clinical Investigations

National Institute of Occupational Safety and Health

at

Asbestos Information Association/

North America 2nd Industry-Government Conference

September 10-11, 1975

Dr. Wagoner is an original staff member of the National Institute of Occupational Safety and Health and is presently located in in Cincinnati, Ohio. Prior to his current assignment with NIOSH, he served as a biostatistician with the epidemiology branch of the National Cancer Institute.

Dr. Wagoner received his doctorate in epidemiology and biostatistics from the Harvard School of Public Health and is the author of 17 papers on carcinogens and cancer-related diseases.

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Exposure to asbestos has long been recognized as an occupational health problem. In fact, most if not all the commercial varieties of asbestos both in animal and field epidemologic studies have been demonstrated to be carcinogenic. What then are some of the issues that remain unresolved with regard to the health effects of asbestos?

In 1971, the National Institute for Occupational Safety and Health recommended a standard for asbestos exposure of 2 fibers per cc of air greater than 5 microns in length. This recommended standard was made by NIOSH in full recognition that it would prevent asbestosis and more adequately guard against asbestos in these neoplasms. In recommending this standard, NIOSH acknowledged and I quote, "the lack of epidemologic studies of clinical data in the exposure range that must be considered," and "the lack of of definite information on the biologic response on fibers of different sizes." During the same time period and subsequently, questions have been raised over and over as to the necessary role of cigarette smoking as a co-factor in the induction of lung cancer among asbestos workers. And more recently, questions were raised as to whether or not a carcinogenic risk is associated with the exposure to non-commercial forms of asbestos in the cummingtonite-grunerite series as found in the tailings of Reserve Mining, and in the air around that facility. It's these issues that I should briefly like to go over and discuss some of the NIOSH programs.

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First and foremost, I think the NIOSH program on asbestos interacts very deeply and strongly with other members of the panel, i.e. the EPA and the Bureau of Mines. Some time ago, we undertook a study of a manufacturing facility engaged in the manufacturing of asbestos textile, friction and packing products. This population observed during the period 1940 through 1962 demonstrated a significant excess of respiratory diseases was manifest not only among the males but also among the females. In that population, seven lung cancers were observed in the females versus one half case. With full recognition of the data that Dr. Selikoff has demonstrated, that being, cigarette smoking in combination with asbestos hightens the risks of subsequent lung cancer, we went back and ascertained from the hospital admission records, as opposed to discharge records, the smoking histories of our lung cancer cases. Significant is the observation that, of the seven lung cancers, four or five had never smoked cigarettes. Because of this observation, we now have underway a more indepth investigation following up individuals who were medically examined during part of the 1967 medical examinations of NIOSH.

The second study that I think is most important was the study that was undertaken among a group of gold miners in the state of South Dakota. The study is restricted to 439 individuals who were examined in 1960 as part of a silicosis survey -- individuals who had never worked in any other mine other than this

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gold mine, and individuals who had 60 or more months of employment. This population was followed up from the time of examination through 1974, and we have observed in that population a significant excess of death due to respiratory disease, be it malignant or nonmalignant. Indeed, 10 cancers of the respiratory tract were observed versus approximately three, significant at the 1% level. The risk of lung cancer increased and was most predominant in that group following 20 years since the onset of employment in this mine. To explain and interpret the results in terms as to what possible agents could be related to this excess of respiratory disease, it's noteworthy that in 1960 the Bureau of Mines surveyed this mine and the agents found in the mining environment the radon daughter levels were significantly below .01 working level. The free silica levels were well below the current OSHA standard. The 1973 survey by the Bureau of Mines replicated these data. In 1974, 200 membrane filter samples were collected over four work shifts and fiber concentrations were determined by the OSHA base contrast - optical microscopic method. The average fiber concentrations greater than 5 microns in length was .25 fibers per cc, with the highest single sample of 2.8 fibers. 25 of these air samples were subsequently obtained by NIOSH -- the highest samples were subsequently analysed using transmission electron-microscopic method. The average concentration was found to be .36 fibers per cc greater than 5 microns with the total of 4.82 fibers. Fiber characteristics were found to be .13 micrometers in diameter, and 1.1 micrometers in length with approximately

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90% of the fibers less than 5 microns.

Assessing all the known exposures in the mine, assessing the ventilation practices which were operative going back into time, that were observed in 1960, we now conclude from this study the need for re-evaluation of the accuracy of the OSHA standard as well as the accuracy of the present asbestos sampling and analytic methods. Samples taken from this mine as well as samples taken by the Environmental Protection Agency in Silver Bay showed that the mean concentration of fibers in the mine based on 25 samples in 4.8 fibers, in Silver Bay at 4.7. But the range of .7 to 11 in the mine and .5 to 11 at Silver Bay. The percent of the fibers greater than 5 microns in the mine were 6 percent as opposed to 5 to 10% in Silver Bay. These data now demonstrate to us the very deep concern concerning the potential health effects among the workers in that facility and possibly the general population, secondary to waste disposal and industrial process discharges.

Finally, our research program also addresses issues and addresses the area as was so emminently stated by Dr. Paul Kotin at this meeting last year, when he stated that industry must and in fact does accept the responsibility for the hazards and illnesses that have already become manifest. We in the Federal Government, and we at NIOSH in particular, recognize our responsibility in that area and have provided the leadership with the

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National Cancer Institute, specifically in the cancer control program. With regard to brake dust generated as a result of brake relining operations, our own industrial hygiene surveys, as well as those of Dr. Selikoff, have demonstrated concentrations of asbestos in these operations and furthermore that the hyper characteristics are again those of the small fibers. Our concern, in concert with industry and labor, was demonstrated recently as we jointly met to resolve this issue and publicly put forth our concerns to the general population as well as to the Department of Labor. Thank you.

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Remarks of Lawrence A. Plumlee, M.D.

Medical Science Advisor, Environmental Protection Agency

at

Asbestos Information Association/

North America 2nd Industry-Government Conference

September 10-11, 1975

Dr. Plumlee is Medical Science Advisor in the Office of Research Development, Environmental Protection Agency. He joined the Agency in 1970.

Prior to assuming his present position, Dr. Plumlee was an assistant professor of Behavioral Biology at Johns-Hopkins University. In addition, he served as a research investigator at Walter Reed Army Institute of Research. Awarded a Postdoctoral Special Fellowship at the National Institutes of Health in 1969, Dr. Plumlee also received a scholarship to the Postgraduate course on Asbestosis, Mount Sinai School of Medicine, New York City, in 1970.

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I am the fifth EPA speaker this afternoon. I was reluctant to decide what I was going to address until I heard the others. I am going to try to address some of the issues and questions that were raised today by some of my EPA colleagues as well as Dr. Joe Wagoner from NIOSH (National Institute for Occupational Safety and Health.)

Someone asked Dr. Albert whether or not EPA's and NIOSH's research programs were duplicative and Dr. Albert said that they were complimentary. I think the sort of data that Joe Wagoner presented today show how much he, as an individual and as a NIOSH investigator, is interested in environmental issues that go beyond the workplace. Joe indicates that his data show significant increases in lung tumors among miners exposed to cummingtonite-grunerite dusts identical to those in the air around the Reserve Mining Company. This points to a possible need for EPA action in this area. We have already begun surveying various iron deposits to see how commonly we find cummingtonite-grunerite ores and to try to characterize them so that we can compare them in terms of fiber type and size with the fibers that Joe found in the gold mine and that we have found in Silver Bay. The Agency, as it gains more information on this, will be determining whether or not there need to be air regulations for these types of substances which don't necessarily fit the classical definition of asbestos, at least in the product sense of the word.

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One thing I wanted to do was to elaborate on some of the health effects research that relates to the fibers that Joe has talked about, as well as to ingested asbestos. Epidemiology and laboratory research should go hand-in-hand. Now that Joe has related an increase in cancer to the cummingtonite-grunerite ores that were mined in South Dakota, it is appropriate to ask the question, "Is it those fibers or is it something else in the mine that might be responsible for the increases in cancer?" EPA has in its program plans this year a project to study the inhalation of amphibole rock contained in taconite iron ore. This study will be done on contract to our laboratory in Research Triangle Park. EPA intends to use several thousand rats which will be exposed to amphibole rock from taconite iron ore by intratracheal installation as well as interpleural injection. The end points will be pulmonary carcinoma, mesothelioma, and tumors elsewhere in the body. Controls will be exposed to amosite asbestos.

Since one of my principal interests is to try to muster the resources of the Department of Health, Education, and Welfare to provide supplementary environmental health criteria to EPA, I wanted to tell you something about those activities that impact on the asbestos issue. Mr. Robeck indicated that EPA is helping to support a study being performed by NIEHS (National Institute of Environmental Health Sciences), to test the question, "Is orally ingested asbestos carcinogenic?" FDA (Food and Drug Administration), I believe, is also contributing money to this study. They certainly

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participated very actively in the derivation of a protocol along with EPA and the National Cancer Institute. You may already be familiar with these studies of orally ingested asbestos at NIEHS, so I'll summarize them briefly.

As you know, some cohorts of asbestos insulation workers show about a three-fold increase in gastro-intestinal cancer over the general population. There has been some doubt expressed about whether asbestos alone is the carcinogen here, as has been already mentioned several times. One question is, "Are these workers, who are showing the increased gastro-intestinal cancer, also simultaneously smoking so that the increased GI cancer relates to particles from cigarettes adherent to the asbestos fibers?" This compounds the question of whether asbestos alone, when ingested, will increase the GI cancer rate. Thus, we felt that animal studies might help to clarify the problem. A public meeting on this was held last winter -- there were lots of questions and problems with the protocols. I don't want to review them all now, but just to tell you what the studies that are being contracted are basically like.

One is a lifetime oral ingestion study in rats, at one-dose level, using four asbestiform types. These types are chrysotile, crocidolite, amosite, and a fourth material which will either be pure talc or tremolite material. This contract will be carried out at Hazelton Laboratories in Virginia. There will be an interactive

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study as part of the study. A positive bowel carcinogen -- a known bowel carcinogen -- will be used as a control as well as controls which are exposed to no suspect materials. It will be several years before results will be available from this study.

The second part of this program is a lifetime oral ingestion study in hamsters -- the first was in rats. This is in hamsters at one-dose level using two or three asbestiform types, including an interaction study using a known bowel carcinogen. Two of the types that will be tested in hamsters are chrysotile and one amphibole. The latter has not been decided on exactly. This study will be carried out at the Illinois Institute of Technology Research Institute.

Finally, the big part of this project involves characterizing the specific asbestiform types needed for the above experiments. We think that perhaps a ton or so of material is needed for us to have sufficient material to feed these hundreds of rats and hamsters, and to also make sure that we have more of the same materials than we use so that follow-up studies can be done depending upon the results of the earlier studies.

I want to mention a couple of other studies that again reflect collaboration between EPA and other agencies that relate to the kinds of amphibole materials that are in the water in Duluth.

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The CDC (Center for Disease Control), Epidemiological Intelligence Officer in Minnesota -- Dr. Barry Levy -- is coordinating various epidemiological studies in the Duluth area. He has already reported a study which described all of the cases of mesothelioma in the Duluth area between 1969 and 1972 along with the Minneapolis-St. Paul statistics. As you may remember, there was no difference in mesothelioma between the two area. But, as you also know, the discharges from Reserve Mining were only increased to very large proportions in the middle 60's. So there was some question about whether or not the latent period was sufficient to show tumors even should there be any cancer risk. Therefore, he is adding to his study of mesothelioma and gastro-intestinal cancers, in comparing Duluth and Minneapolis-St. Paul, additional years, specifically the years 1973 and 1974. Finally, he is adding to this study several other smaller communities which use water which we think is contaminated with these fibers. Lung cancer studies are being undertaken for these areas to see if there might be any pleural mesothelioma or other types of lung tumors. The mayor and chief health officer of Duluth have organized a recording system wherein all physicians are requested to report any mesotheliomas diagnosed or suspected. These cases are then interviewed, or their relatives are interviewed, to obtain occupational and residential histories. Of course, pathological confirmations are carried out.

There's a third study that I should mention briefly. We're collaborating with the Center for Disease Control and the Connecticut

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State Health Department to try to assess the impact from drinking water which has been transported through asbestos-cement pipe. The industry-supported study at the American Water Works Research Foundation last year strongly recommended that this type of project be carried out. We will try to determine in Connecticut, the only state which really has quite a good tumor registry, the length of time that various residents have drunk water from asbestos-cement pipe and will try to characterize the asbestos content of waters from these pipes. We will then correlate these with tumor rates in the Connecticut registry.

I think that's about all the time I have. I haven't really been able to discuss in much detail the studies that EPA's Cincinnati laboratories are doing relating to ingested asbestos, but these are largely of a nature of additional epidemiologic studies, and some in vitro mutagenesis studies in which fiber lengths and types are being studied in gastro-intestinal cell culture lines. So that perhaps, in using in vitro cell culture studies from human GI tissue, we may be able to determine whether or not fibers of different types and lengths carry different risks to the gastro-intestinal system. Thank you.

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Remarks of Byung K. Kwon

Senior Project Manager, Division of Health Standards,

Occupational Safety and Health Administration

at

Asbestos Information Association/

North America 2nd Industry-Government Conference

September 10-11, 1975

Mr. Kwon is Senior Project Manager, Division of Health Standards, Occupational Safety and Health Administration. He received his formal training as an industrial hygienist and toxicologist from North Carolina University.

Mr. Kwon had extensive work with industry, including Haskell and Hazeltine Laboratories and Kennecott Copper before joining OSHA in 1975.

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I am responsible for the programs going on at OSHA as far as asbestos is concerned. We are preparing a proposal to amend the asbestos standard as I'm sure most of you know. The timetable is not definite, but it probably will be published before September 30th.

Before I get into some of the issues, I think it is appropriate that you know that Harry Gilbert, who worked on the proposal, is on leave of absence pending his retirement. Most of the work that has been done so far is Harry's. However, another project officer has been assigned, his name is Bill Warren. He will be here tomorrow morning with Dan Boyd.

Most of you know that this amendment proposal was triggered by court order as the result of a petition filed by AFL-CIO. The court remanded two issues, that is, compliance date of 2 fibers per cc and retention period for monitoring practices. If we continue along the tract as far as the speed at which we produced our standard, probably that day will catch up with us automatically. I hope not. We try our best, however, there are certain limitations that we have to recognize. While we are working on this court order, we also recognize that certain aspects of the standard need to be modified. I will not go into details on what the proposal will look like because Marshall Miller has not approved it yet. So, I will just raise the issues so you all understand what they are.

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One of the issues is the definition of asbestos, especially, tremolite. Also we will be dealing with the definition of asbestos fiber. There are small items that we will be clarifying more clearly such as a sampling time for ceiling concentration determination. In addition, the respirator section will be updated.

We will be dealing with requirements for record keeping, medical records, monitoring records, and we will be introducing the concept of action level, however, we won't be calling it an action level, but there will be a level below which certain requirements won't be necessary. We firmly believe that this section is necessary for not just this proposal but for all other proposals. We will provide alternative medical examination cause. Also, we'll propose a procedure to be followed when an employee refuses a medical examination. We will include a provision of transfer of monitoring and medical records especially when the company goes out of business.

There are some operations that certain industries requested to be included in the standard. We have done this by way of an appendix. Let me explain why. Our policy is to propose a performance standard rather than a specification standard. We don't like to change the standard every year. We would like to leave room for improvement without changing the standard. It takes a year to change a couple of words. However, we would like to include an

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appendix section where we can provide information which is not mandatory but will provide not only information but the results that we are looking for.

This proposal will be in the Federal Register in a rather short time from now. I would like to make a very strong personal request. This proposal is a proposal -- it is not a final rule. Therefore, if you have information pertinent to the issues that we have raised, please participate. We will be setting the final standard on the basis of records we collect, not on personal judgements. Again, we are not dealing with a determination of another level. We are just talking about a court order that makes us remove the compliance date. We have not received any recommendation from NIOSH on whether the level should be changed or whether fibers less than 5 microns in length should be counted. We are not addressing those issues. If you have information on such things as definitions of asbestos and fibers, participate with us. Without those records, we will have to set the standard on the basis of what we have in our hands. You are the people that have the information. I invite you to participate. Thank you.

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Remarks of Aurel Goodwin, Ph.D.

Chief of the Division of Health, Metal and Non-Metal Mine

Health and Safety, Mining Enforcement

and Safety Administration

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Prior to assuming his present position in MESA, Dr. Goodwin was chief of the Denver Health Group of the Bureau of Mines. He has also worked for the Naval Radiological Defense Laboratory in San Francisco.

Aurel Goodwin received his doctorate in physics from the University of California (Berkeley).

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About the agency that I work for, just a little note that will help you remember. An employee of a mining company drew a little cartoon and put it on the wall. If you think MESA is a small town in Arizona you're in trouble. MESA is not only a small town in Arizona, there is such a thing called the Mining Enforcement and Safety Administration. It is part of the Department of Interior. It was part of the Bureau of Mines. In 1973, the Secretary of Interior decided, due to much public discussion and the fact some mining disasters had occurred, that he would remove any appearance of conflict of interest between the enforcement agency and any research that might appear to be benefiting the industry. Accordingly, he formed the Mining Enforcement and Safety Administration.

MESA, as we call ourselves, is responsible for administering mining health and safety legislation. The Coal Mine Act is one that I'm not involved in, but is one that we administer. The other one that is my responsibility, at least as far as health, is the Metal and Nonmetal Safety Act. It was passed in 1966 and applies to the occupational exposure of miners and millers. Under this Act which promulgated the standards that apply to asbestos, no miner or miller should be exposed to a time weighted average of asbestos fibers more than 5 fibers per cc of air greater than 5 microns in length.

Now, Joe Wagoner talked about recent research that quite likely will impact on the mining aspects of asbestos. I want to

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talk a little bit about my problems with regulations. I guess the first one is that I don't like the word "asbestos" in the standard anymore. It does several things, partly it obscures the problems that seem to be surfacing from Dr. Wagoner's research. There are many minerals that are asbestos minerals which have never been called asbestos and have never been mined. In the mines they occur as asbestos. Further -- there are other minerals that are not even in the family of asbestos but occur in fibrous form. Whether these have similar biological response to humans breathing them, I do not know. But if they do have biological response and induce diseases that are similar to those that are so called asbestos associated, we don't want to exclude them from our regulations.

As long as we are only talking about asbestos and mining, we are throwing out a very great population of risk. There are only five asbestos mines in the U.S., and they have a working population of 400-500 people. I am certainly sensitive to the individuals working in the mines, but this is not a very large population as far as the U.S. mining industry is concerned. We could do our enforcement in these mines without any difficulty by collecting and counting fiber samples. But when you expand this to mines, like the Reserve mine, and as Dr. Wagoner said, the gold mine, and copper mines that may have fibrous amphiboles in ore, you expand the population to several thousands of employees. The problem then is quite magnified in terms of sampling and analysis.

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Also Dr. Wagoner said we may be looking at the wrong fibers. This again causes some difficulties for us if we have to go to electron-microscopy to count every sample. If indeed it is not just the mineral itself, but the physical nature of the fibers and counts, I don't see any other way at the present time other than something like electron-microscopy.

Neither the Bureau of Mines or MESA does any medical research so I'll have to beg off from any questions about medical aspects of diseases in the U.S. mines. We do have a regulation that requires mine operators to report occupational illnesses to us, but we get very few occupational illnesses from the whole industry. I think that basically is what MESA is and what we do. Thank you.

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Remarks by Joseph L. Goodman, M.D.
Medical Director, Certain-teed Products Corporation and
Raybestos-Manhattan, Incorporated

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Dr. Goodman is in private practice in Charleston, S.C. and also serves as medical director for Certain-teed Products Corporation and Raybestos-Manhattan, Incorporated.

He operates a clinic, lectures at the South Carolina School of Medicine and is active in a broad range of activities connected with industrial and community health.

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I'd like to talk rather rapidly about a medical program, but first let me give you an idea about what has happened in industrial medicine relative to its effect on our society. As you know, industrial medicine is not very new, it goes back even to the time of Hippocrates. Ramozzini is the father of occupational medicine. He wrote a book on about 100 occupations in 1700 and proceeded to put it on the shelf for 90 years. In Medina, Italy, in 1700, they had a suit against a company for polluting the atmosphere with sulfuric acid, severe cases of bronchitis throughout the community. Contrary to the way things are today, the public health service defended the plant, private attorneys and physicians sued the company, and the company won the suit! This shows you how old industrial medicine is.

I would like to use some slides and go through industrial medicine. The first slide shows you some basic elements we deal with. It's ridiculous to show this but to indicate that there is a difference in color, difference in fiber, which is a great controversy today. What causes the cancer? Does the slide show anything to stimulate an interest in whether the fiber itself, or carbon black -- any kind of fiber precipitates the carcinoma that we see in private practice? Surprisingly enough, in an industry that I have been associated with for almost 20 years, surveys of deaths from 1898 to the present day show only 2 mesotheliomas, one abdominal and one pleural. One was autopsied and that's all we have been able to find. This in contrast with a lot of mesotheliomas that we feel

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will occur in the asbestos industry -- the cause of which I am not sure is exactly clear to all medical people.

Next slide please. I try to depict by a schematic design how the industry was in the 1920s to 1930s with the individual not being able to see the machine next to him. Somebody employed had to wipe the electric light bulb so he could see.

Next slide please. The sheet metal and duct system were introduced in early 1937; the exact date when this plant had it. We've really made some advances regardless of what some people say about us. We started early in 1937 to try to clean up the plants. Now, we obviously weren't very aware of the immense problem we were facing.

Next slide please. At that time, they used to employ individuals to go through the ducts, scrap off the asbestos. You can imagine the exposure of this gentleman going through the duct system.

Next slide please. Then we had a bag house where they used to use buggy whips to whip the sacks to settle the asbestos. This is a fact of life that we had. This is exactly what happens to the individual who has been exposed to heavy doses of asbestos over long periods of years, approximately a mean of 19 years, and we see the results of this type of exposure now. The people I see now show quite a difference.

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Next slide please. We go to the modern wheel and show the contrast of how progressive industry has been. Buggy whips are no longer used on the bags!

Next slide please. Another view of this to show the contrast as to the way things have progressed from 1900 to the present day.

Next slide please. This is the slide just to show the dissent of fiber in the area, the breathing area of the workplace, not out in the public which is not subjected to this sort of concentration. This is in the old counting system where you had parts per million and it's now down to where you can talk with the conventional processes -- if you wet the conventional processes you can manage to get below 2 fibers. If you are talking about the conventional dry and you run it through the spinning operation through a water trough you can get down to below 2 fibers. Enclose it and you can get below 2 fibers. This has been done in certain engineering and certain processes, like the old mule spinning, which has to be left out all together.

Next slide please. Now there is a new process. The novatex process of wet asbestos which runs a count of around .5-.8 with a mean of .8 fibers per cc. This is a wet process where they eliminate the carding and spinning which is an old method of making yarn. There is a lot of progress in this area.

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Next slide please. This slide indicates how long it takes to develop cases of asbestosis. And, you see, it is a mean of some 19 years. Rarely do we examine people with a stethoscope. I am not familiar with rats or mice, I deal with people, and when you examine people you just don't see the changes in the individual in less than 10 years, ordinarily. And we're seeing less of it now. You can see a lot of stuff in a person's x-ray and not hear the cracking rails. You never see the clubbing of the nails that's written so much about. It's just too early, I think, to detect it. The early definition, diagnosis of asbestosis, cannot be made by clubbing fingers. When you see it, it's often too late, it's usually congenital, and has nothing to do with respiratory defect.

Next slide please. This slide is interesting. In the 1930s, you see the high peak of the dust, then the drop. There is a peak during the war years where we didn't have too much control of the dust. Then you see the highest instance of asbestosis occurring in 1955-57 and than a precipitous drop. Corresponding to this, there was a precipitous drop in bronchogenic carcinoma as well as asbestosis. I'm sorry I don't have a slide that goes further out. I have a feeling that we may be approaching, as I asked Dr. Albert today, are we approaching a safe level? Are we approaching a level at which there will bot be the occurrence of new diagnosed cases of of asbestosis and carcinoma.

Next slide please. This is a medical program that we have

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installed at Raybestos-Manhattan and Certain-teed in which we rely very heavily on the investigative officer, the physician. Person-to-person contact. It's very important to get adequate history. It's the most important part of your physical examination. The physical examination is usually the same type of examination that most good physicians give with particular emphasis to the chest. We get the history and physical and then we go through the routine things because, if we are going to treat a patient, for an asbestos hazard to encompass the whole thing you must think of the whole person. You must survey the whole man. I think as you will see as you go down into the physical examination that it is a very simple thing to follow. The usual eye for glaucoma, the usual thing for listening to the chest, and we repeat this physical examination every year. We do this examination according to his birthday every year. We listen to his chest and check for hernia, heart, hardening of the arteries and blood pressure.

Next slide please. We go into other elements of the industrial setting which has to do with lead toxicity. We do surveys for people who are, for instance, in touch with perchloethylene or who deal with lead. We do blood leads. We are now in the process of doing sputum studies on individuals who are subject to asbestos exposure and also who are heavy smokers. The principle being that the sputum may yield. There is some controversy about this and there is literature to show it is not as effective as one might think. But I feel that listening to the Tyler study that was given that we have

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a better chance of picking up carcinoma of the lung (on a sputum study) before it appears in an x-ray. Some work was done in the 1950s with smokers where sputum was collected by inhalation saving and getting the sputum out. Changes were detected in the cells of the sputum that were metaplastic i.e., in between the carcinoma stage. Certainly, if you find carcinoma, it is not going to be reversible. But the metaplasia cell will show some changes from smoking or asbestos or whatever toxic materials such as you might find in any plant related to nickel and other elements of carcinogenic agents. If you take the person out of that environment, the cells will then reverse themselves to normal cells. This has been very well proven in the smoking studies. We are trying to set up a means of doing this on a basis that will have good records to do these statistical studies. This will be not only for the benefit of our employees but for future research. If you can see a lesion in the lung, it is very disappointing to me a physician to note that once you see this carcinoma in the lung, it is almost too late for an operation.

Studies are available doing x-rays every three years and then doing them every six months. The only difference in the results being in the yield is that there is a better yield surgically but not a better yield as far as carcinoma is concerned. When you see that carcinoma in the x-ray it's about a centimeter in size, it already has billions of cells, and if you are lucky, you can get the carcinoma out if it happens to be one of the slow growing areas

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located in the area of the lung that is encompassed by certain tissue. But usually it is a very disappointing and discouraging thing to see carcinoma in the lung.

I think that the next element of concern in industry is high blood pressure programs. We have programs related to diabetic control and take the blood pressure every month. We check the sugar about every two months. We call the people who have other chronic endocrine disturbances and this gives an overall view of the health of the individual. Good medical surveillance is very important and they are very appreciative of this. You may realize this, but the unions are becoming more and more self-conscious about what the medical programs are doing for the employees. They are not, I don't think, really interested in what the medical program is, but what the yield is, and they ask questions which you might understand, that lead you to get a little discouraged about what you do. But I would persist, in keeping with what Mr. Solon said this morning, that I think that you should be more adamant, more vigilant, about medical surveillance and about industry in general. Just be a little harder about things, because in our field, you have to treat people very much like Mr. Solon said in industry, you treat them as if they were your family and then you will always come out with the right answer. If you won't do something for the employees that you would not do for your family, you ought to refer them to somebody else for a proper answer. With this criteria in mind, you usually won't make a poor judgment.

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Next slide please. I want to show you some of the forms that we use. This is a rather comprehensive form which gives us the age of the individual, we get immediate answer about who their doctor is, and we get a history which gives us a pretty good background. We use this history and inventory as a means of hiring an individual, to know all about him. You don't have to use this for firing somebody, not putting them on the job. It's used as a good inventory to understand and put the individual into a proper slot. It certainly is very important in evaluating his proper performance. The hiring of handicapped, or people that have hypertension, cardiac disease, or other disabling features, is not without the scope of industry. They can certainly do this without any trouble, without any increase in cost.

Next slide please. This shows the military history. The occupational history is the most important thing of all -- to see what other exposures you have. For instance, in the place where we live in South Carolina, we get a lot of cotton dust people who have the Monday morning asthma and we see a lot of fibrosis as a result of this.

Next slide please. This is general physical form that we use.

Next slide please. At the bottom you see where we classify people, one, two, three, four, and this is what I was talking

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about where one is qualified, two is qualified with changing of any mild difficulty they may have, and three they are disqualified, and four, there is a possibility to hire them with the disability.

Next slide please. These are some of the forms we use for various purposes, e.g. blood type and vision. Then we go to the pulmonary function studies. This is probably the most interesting of all.

Next slide please. We take three of these tests. I'm sure you all have had it. You take a deep breath and you blow out and that is what you record. If we find any abnormality of the individual in an x-ray or in a pulmonary function, we will send the man for consultation to a pulmonary physiologist or to a pulmonary physician. We get a complete survey, such as the diffusion study, which indicates a change which may be more closely connected with the site at which the defect of asbestosis occurs. The diffusion machine, unfortunately costs about $5,000, and it's not very difficult to refer them to a medical university where such a machine is available. It is true that if you have a large population of employees and you do these every year, there is no reason that's not too much to put out for a very sensitive diagnosis which is impossible to x-ray. If the x-ray shows any fibrosis, or any changes whatsoever, they are attributive to the environment that he works in. We get another radiologist's viewpoint and sometimes a third. It's amazing that if you have two doctors it is good for you, but three will kill you.

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You can get two different diagnosis and sometimes three.

Ne- slide please. These are some things that we furnish people like medical policies and procedures so that a nurse can function without you there. I would like to tell you some of the things that we do. For instance, we sit down at the end of our medical survey and talk to each patient individually. We tell them exactly what they have, show them the x-rays, we tell them about smoking, we tell them the dangers of asbestos, to wear a respirator, and this is the educational part of the program. If you have an employee who has been working there some 15-20 years, and he has fibrosis of the lung, it's due primarily to exposure that he had. You look into his department to find what the dust level is and you caution him about wearing a respirator. It may be amazing for you to find out that these people don't want to change their occupation. It's very difficult to relocate people although it is very easy for people to tell you to transfer them from one department to another. But it's not so easy to execute when it comes to their bread and butter. We do sit down with each individual and go over every one of the x-rays every year with everything they have and show them the x-ray. We send a copy of all this to the family physician. I don't know how much more straight forward one can be. You can cause hysteria in a patient if you are not very careful what you say to him about the scars in his lung. Sometimes he is a heavy smoker so you can use that as a therapeutic thing. My time has run out. Thank you.

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Remarks by Paul-A. Filteau
General Manager, Quebec Asbestos Mining Association

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. Filteau has served as General Manager of the Quebec Asbestos Mining Association for twelve years.

Following attendance at Queens and Laval Universities, Mr. Filteau pursued a career as a mining engineer with Johns-Manville Corporation and U.S. Steel in Quebec prior to joining QAMA.

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Ladies and gentlemen,

It gives me great pleasure to bring to you the greetings of the President and Directors of the Quebec Asbestos Mining Association and to express our appreciation for your kind invitation to participate in this conference. Such exchange of information and sharing of experience can prove most helpful and beneficial to our associations in their concerted efforts to resolve common issues to their mutual interest.

At the outset, please accept the apologies of I.C. Campbell, Chairman of our P.R. Committee, who had at the last minute to forgo your invitation to visit with you at this time, in order to appear in Court today, not for personal reasons, but on behalf of his company, as you might have guessed.

As a pinch-hitter, I feel somewhat uneasy at this crucial inning in the history of our industry. Offensively, I wonder if I can reach first base, since the comments I'm about to deliver may not sound too encouraging and cheerful. Defensively, however, I may try to field some of your questions following my remarks, naturally, if time permits.

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PROBLEMS HOLD DOWN QUEBEC ASBESTOS INDUSTRY

History

Modern exploitation of asbestos began about 100 years ago and has since developed into an important world-wide industry.

The first asbestos to be mined commercially in Quebec, and also in Canada for that matter, was shipped from Thetford Mines in 1878. Total production for that year was 50 tons. As new uses for asbestos were found, exploration expanded, new orebodies were discovered and new mines were opened. By 1910, Quebec asbestos mines were producing 100,000 tons a year and by 1929, the annual production had reached 300,000 tons. Following a drop in production during the early years of the depression, again tonnage in 1937 rose to 400,000 tons. The years of World War II saw no appreciable change in the local asbestos industry. By 1955, however, production had risen to 1,000,000 tons per year and in 1974 the figures attained were 1,536,656 tons for Quebec and 1,810,749 tons for the total Canadian production. World production in 1974 was estimated at 5,400,000 tons.

In Canada, the only variety of asbestos to be mined is chrysotile. It comes from Quebec, British Columbia, Yukon Territory, Newfoundland and Ontario. Over 80 per cent of Canadian chrysotile production - or approximately 30 per cent

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of the world's supply of all forms of asbestos - comes from a 60-mile belt known as the Asbestos-Thetford Mines area of Quebec's Eastern Townships.

Today five (5) companies operate eight (8) mines (six by open-pit method and two underground) with a total workforce of 6,500 employees. These companies are: Asbestos Corporation Limited, Bell Asbestos Mines Limited, Canadian Johns-Manville Company, Limited, Carey-Canadian Mines Limited, Lake Asbestos of Quebec, Limited. Their annual production of over 1.5 million tons had an estimated value in 1974 of some $250,000,000.

Even though they all mine chrysotile asbestos, Quebec's asbestos mines are processing a mineral with varying physical properties and, regardless of the processing methods used, yielding varied types of fibre. Indeed asbestos ore is not homogeneous.

Over the past 15 years, the industry's output has risen by over 50 per cent. This has resulted in a gradual increase in employment despite the closure of four mines in that period. The growing demand for asbestos - averaging three to four per cent each year - has led to the constant introduction of more efficient mining and processing equipment and control systems, as well as to the search for additional capacity.

01-0205--

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Exploration and Mine Development in 1974

Major exploration and developments in Quebec's asbestos mining industry in 1974 included the following:

- A major relocation program, involving a waste dump, a provincial highway and a railway right-of-way, enabling Lake Asbestos to enlarge its open-pit mine in Black Lake. Originally scheduled for completion in 1975, the program will make available ore which would otherwise have remained buried.

- Installation of new facilities to collect particulate emissions from dryers at Bell Asbestos Mines, British-Canadian Plant No. 1, and at Carey-Canadian Mines.

- Elsewhere in Quebec, Abitibi Asbestos and Brinco Ltd. have included fibre testing at their pilot plant North of Val d'Or. The orebody is currently estimated to contain 105 million tons. Further evaluation of fibre quality and foreign market development are in progress.

- Rio Algom Mines is still studying the feasibility of developing the McAdam Mining orebody near Chibougamau, Quebec. Situated 700 feet deep, its estimated ore content is 105 million tons with an average fibre content of 3.92 per cent.

- In Ontario, at its mine situated 40 miles South of Timmins, in Midlothian Township, Ontario, United Asbestos has started tune-up operations; the annual production capacity of the processing plant is 100,000 tons of fibre. The mine and mill complex has been designed to meet presumably the Ontario dust control regulations.

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Asbestos Markets

Over 95 per cent of Quebec's chrysotile production is sold outside Canada to more than 80 countries, the U.S.A. being the largest consumer. Between them, the U.S.A., Japan, the U.K., West Germany and France receive about 70 per cent of Canadian chrysotile exports. In this respect, because of the immense range of products that contain asbestos, Quebec's asbestos mines have to produce up to 150 different grades of fibre. Marketing is obviously a complex task.

Even the asbestos producers themselves have difficulty in taking in at a glance the total sum and scope of all the individual asbestos markets. However the broad outlines of the asbestos market are apparent and, from these, certain trends may be identified.

Like the construction industry of any country, asbestos is a weathervane of the national economic climate. But since exports account for 95 per cent of total Canadian asbestos production, the Canadian asbestos industry truly reflects world economic conditions as well.

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Secondary Manufacturing in Canada

Because of the commanding position of Quebec as an exporter of asbestos, there has been repeated criticism and representations in recent years levelled at the Government of Quebec and the Quebec Asbestos Industry for not contributing to the further transformation of asbestos into finished products in Quebec and in Canada. Canadian manufacturers of asbestos-based products agree with such a legitimate claim, are also well aware of the situation, and are endlessly seeking new markets for asbestos-containing products.

The domestic market is rather limited in Quebec and in Canada and, as a result, some of the low-volume or broad-variety asbestos items consumed have been over the years imported from other countries, mainly from U.S.A. The industry recognizes the problem and is trying to do something about it. Although not as simple as it may appear, nevertheless Canadian manufacturers are investigating in many instances the possibility of supplying locally part of present imports. The degree of further processing in Canada is increasing and is expected to grow as markets develop. The domestic market will expand, barring strict environmental limitations, and foreign based parent companies may find it more advantageous to situate in Canada, especially with incentives.

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One must also remember that, except in a few instances, asbestos is rarely the main ingredient of any manufactured product. For this reason, in any decision between locating a manufacturing plant close to its asbestos source or to the market-place, the cost-to-weight ratio of the product and the relative importance of the other non-asbestos ingredients must be prime considerations. Generally speaking, asbestos-cement materials such as piping and conduit must be manufactured close to their markets since their density and high content of sand, silica and cement make them too costly to import or export.

Per-capita consumption of asbestos in Canada is somewhat higher than in U.S.A. This country has long supported a vigorous asbestos products manufacturing industry. In 1973, the apparent Canadian consumption of asbestos-based products was valued at $96.2 million. In the same period, Canadian asbestos products manufacturing plants produced $92.8*million-worth of products, of which exports accounted for $15.3 million. Imports of manufactured asbestos-based products in 1973 totalled $18.7 million.

In brief, any possibility of developing the asbestos products manufacturing industry in Canada must be limited to such product areas as asbestos papers, floor coverings, felts

*- In 1974, this figure is very likely closer to $110-$115 million.

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and textiles where the asbestos content can be as high as 80 or 90 per cent by weight. Exports of these materials could substantially increase in the years ahead. Penetration of export markets however is difficult because of the historic growth pattern in the industry where fibre from Canada is shipped to the market place where large processing plants are established.

Quebec's Asbestos and the World

In 1974, Quebec's asbestos producers exported 1,458,718 tons of fibre, merely 11,250 tons more than in 1973. Shipments to U.S.A. - 659,108 tons - represent 42.9 per cent of Quebec's asbestos market.

In 1972, Quebec's asbestos producers held roughly 36 per cent of the total world market, excluding Canada and the U.S. Including these two countries, their market share was 49 per cent.

In the face of vigorous competition, Quebec's producers must follow the rules set by the market place. It is competition which forces one producer alone to offer its customers 420 grades of fibre, in 1,320 different forms, simply to satisfy their needs.

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In the U.S., markets are perceptibly declining in face of the public's fears as to the effects of exposure to asbestos upon human health. And there are indications that this situation will also occur in Europe and elsewhere.

The loss in 1973 of several asbestos markets is directly attributable to the concern with which asbestos is now viewed. These losses reflect a situation which is likely to prevail until the end of the 1970's and will therefore limit the opportunities to expand existing asbestos markets or develop new ones. The asbestos battle is not only far from won; it even appears to be gaining intensity. New revised environmental standards naturally influence decisions by individual manufacturers whether or not to continue to use asbestos in their products. In assessing the long-term impact of health and environmental factors on the asbestos industry, it should be remembered that other industries face similar problems.

Industrial Hygiene in Quebec Asbestos Mines

Up until recently, the official standard in Quebec for dust concentrations inside mining and milling plants was

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5 million particles per cu. ft. (mppcf) measured by the Midget Impinger, an apparatus that counts total number of solid particles in the atmosphere. And there are still very strong advocates of this method of measuring airborne dust.

When the membrane filter method was introduced, the Industry decided to employ both methods in order to continue comparisons with the past and to conform to the requirements of modern practice. Accordingly, on October 1, 1973, the Industry through the Environmental Control Committee of the Quebec Asbestos Mining Association proposed to the Quebec Government a new set of threshold limits for dust concentrations inside mine plants, which would reduce occupational exposure from 12.4 fpcc. in 1975 to 5.0 fpcc by the end of 1978 with a maximum total dust concentration of 5 million particles per cu. ft.

The policy decision by the Quebec Government was late in forthcoming, however, and it was not until March 1975 that the Department of Natural Resources officially announced the establishment of guidelines leading to a realistic standard of 5 fpcc, measured by the membrane filter method. This was

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translated into Order-in-Council 2583-75 of June 25, 1975 stipulating that "no mine is to exceed for a period of eight hours an average concentration of five asbestos fibers longer than five microns per cubic centimeter of air", effective January 1st, 1978.

The Quebec Government went even further and adopted Bill 52 on June 27, 1975. This Act provides a double indemnity system for workers affected by asbestosis or silicosis. The new scale of compensation will increase present compensation costs to the mining companies concerned by nearly 100% per individual case on the average.

If one considers that it normally takes twenty years or more before the symptoms of asbestos-related diseases appear, then those cases showing up today are really an indication of past conditions. Through research and improved dust control technology, the industry has taken and continues to take every step and means to reduce the incidence of such diseases.

Dr. J.C. MacDonald, Head of the Department of Epidemiology of McGill University and under whose supervision studies on the health of Quebec asbestos mine workers were conducted over

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the past nine years, has declared publicly that attempts are being made to frighten people unnecessarily and that the exposure situation today is in no way comparable to that of twenty or thirty years ago; and that the only workers actually affected today are those who were exposed to asbestos dust twenty or thirty years ago, when technology and medical science were much less advanced.

Epidemiological studies and data gathered over the past decade relative to the health of Quebec asbestos mine workers support the view that 5 fpcc may be considered as a tolerable concentration for occupational asbestos exposure. In view of these findings, there is every reason to believe that a reliable degree of safety can therefore be achieved in Quebec's asbestos mining and milling operations.

General Comment

Canada's annual asbestos production of 1,810,749 tons of fibre in 1974 represents about 40% of world production. The variety of operational setbacks and labour disruptions occurring since late 1974 will probably mean forfeiting this production leadership to Russia in 1975, which has an annual output estimated at 2.0 million tons. Demand for most asbestos

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fibre groups was strong during 1974 and has remained firm during the current recession. The decline in supply resulting from the landslide at Canadian Johns-Manville's (CJM) Jeffrey mine, the fire at Asbestos Corporation's King-Beaver mill and the continuing strike by workers at the Thetford Mines-Black Lake operations has created very tight market conditions.

It is indeed unfortunate that, at a time when the demand for fibre is good, the Thetford Mines producers are afflicted by a legal strike since the 17th of March 1975. This unusual situation could result in a drop in production that could be as much as 40% this year for Quebec asbestos producers. This means that deliveries will be delayed until the strike is settled and, at such time, very likely will be handled on an allocation basis.

Looking forwards to brighter days, however, the ore reserves of the Quebec asbestos mining industry support the view that production can be maintained at current or moderately increased rates of output between now and the turn of the century. Furthermore, recent surveys of world outlook and demand for asbestos indicate that, in spite of

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occupational and environmental health considerations, asbestos will not only retain, but will very likely enhance its position as an essential mineral in the world economy for the foreseeable future.

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Remarks by Michel Lesage, M.D., LL.L.

Medical Advisor, Quebec Asbestos Mining Association

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Dr. Lesage is Medical Advisor to the Quebec Asbestos Mining Association having filled this position in 1974.

Dr. Lesage received his medical degree from Laval University and his law degree from Montreal University. He has eight years practice as a general practitioner and radiologist, and engaged in the practice of law for two years before joining QAMA.

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I am glad to be with you once again this year for the annual Industry-Government Conference. I would like to make few remarks, specially on two items, the IOEH and the new government regulations in the Province of Quebec related to asbestos and health.

The IOEH --

I think that almost all members of this wonderful audience here know about the Institute of Occupational and Environmental Health. Particularly, last year, Mr. Ian Campbell, Chairman of the Public Relations Committee of the QAMA, here at the Industry-Government Conference, edition 1974, gave a complete description and history of IOEH. Just to summerize and for the benefit of those who may not know, I may tell you this: The Institute of Occupational and Environmental Health was founded in 1966. The need for objective scientific evidences prompted the Quebec Asbestos Mining Association to establish in 1966 this Institute in Montreal under the guidance of a scientific committee composed of research scientists and medical experts of world repute and recognized authorities in their own countries. Members of this committee are: Dr. George Wright, Chairman, Dr. Kuschner, USA, Dr. Higgins, USA, Dr. Grégoire, CANADA, Dr. Timbrell, U.K., and Dr. Pelnar, Scientific Secretary of IOEH.

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on biological effects of asbestos by its number and by its high standard it indeed contributes a great deal to the current objective knowledge on the subject.

Some of those projects have already been terminated, others are still going on and will be terminated soon, others are continuing for 2 or 3 years, and we have two brand new projects that were accepted this year. One about the differencial PH analysis of chrysotile, its application for measurement of dustiness at worki places, and the other that could lead to new methods of diagnosis of pneumoconiosis and other lung disorders. This project is entitled "Nature and specificity of the rales found in workers exposed to asbes Here is a brief description of this project that could interest all of you.

--First, there will be a study, by objective sound recording and analysis, of the nature of the rales heard on the chest of person exposed to asbestos. Then, an attempt to determine whether these rales are unique as compared to similar breath sounds found in other diseases.

--Second, there will be a quantitative study of the observer variability in assessing the rales from patient with asbestosis and in distinguishing them from similar sounds in other diseases.

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According to their recommendations, the Institute of Occupational and Environmental Health has sponsored since 1966, 24 research projects and a total of more than 3 million dollars has been spent or committed by the IOEH in pursuit of this objective. Everybody knows that the Institute is 100% supported by the Quebec Asbestos Mining Association.

The accepted and supported projects can be divided into the following groups of practical interest:

1. Studies of comparable epidemiologic experience in the mines of chrysotile in Canada, in Italy, and in the mines of anthophyllite in Finland.

2. Studies of epidemiologic experience in the asbestos-cement factories and the shipyards.

3. Studies of epidemiological experience with mesothelioma among the general population.

4. Studies of physico-chemical state and transformation of fibres during technological steps from mining to application of products and study of relation thereof to health experience of the exposed worker.

5. Studies of dynamics within the body and of mechanism of biological effects of asbest .

More than 90 scientific articles and books were published originating under research projects supported by QAMA. This represents an important portion of the scientific literature

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These two items will form the "Part A" of the project. The "Part B" will consist of a development of efficient system for collection of breath sounds data in industrial surveillance. This project is to be completed in 2 years. This project in under the direction of Dr. Raymond Murphy of Faulkner Hospital (Boston, Mass.) and you may be interested to know that Dr. Murphy is with us. These are the news from the IOEH.

The second item is the new government regulations, statues or laws on health and safety of workmen. There were three important drafts:

The first, the 14th of May 1975, it came into force as a regulation on the medical certificate of workmen employed in mining and quarrying operations.

The second, the 27th of June 1975, Bill No. 52 called "An Act Respecting Indemnities for Victims of Asbestosis and Silicosis in Mines and Quarries" was assented.

And finally, the third: A regulation amending the regulations respecting safety and protection of workmen in quarries came into force the 9th of July 1975

Lets explain this last regulation that is quite short. And that can be read like this:

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"Effective from January 1st, 1978, every mine whose operations is liable to result in the emission of asbestos dust must be conceived, designed and provided with a treatment or evacuation system such that the concentration of such dust in the air, within the mine, does not exceed for a period of 8 hours an average concentration of 5 asbestos fibres longer than 5 micron per cubic centimeter of air". Two remarks about this regulation. It is the first time that a written specific threshold limit value is edicted by the Provincial Government for asbestos fibres. Before that the only regulations were those concerning industrial establishment according to the Public Health Act where it was said that "anyone operating in premises where there are employees and where the atmosphere becomes charge with either vapours, dust, fumes, gazes or any other substance susceptible of affecting the health, must take the necessary measures in order that the limit of concentration of the substances in the atmosphere will not pass those which were established by the Director". This said Director was the Medical Officer charged by the Minister with supervising and ensuring the salubrity of industrial establishments, mines and other similar industries, and with prevanting the spread of occupational diseases. And the Director had established long time ago that the limit of concentration for asbestos was five million particles per cubic foot of air. It is still the threshold limit at the present time and the instrument used for dust counting is the Midget Impinger. Now legally speaking, beginning on the

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first of January 1978, the only threshold limit will be 5 fibres per cc. This creates a problem in our continuous researches and epidemiological studies because all the data we have since the beginning concerning dust levels are in "million particles per cubic foot" of air. We have supported a study made by Dr. Gibbs of McGill and Mr. Lachance of our laboratories to try to find a correlation between million partic of dust per cubic foot and fibres per cc of air. Unfortunately, it seems that it is not possible to establish any correlation, at least any general correlation due to the different concentration of asbestos fibres in the airborne dust of different mines and mills. So, the only solution is to keep both the Midget-Impinger-million particles per cubic foot method and the membrane filter-fibres per cc method. More than that, we think that this will be more informative for us due to the fact that the two methods do not give the same informations. It's an other good reason for keeping the two dust counting methods.

Lets go back now to the first regulation I mentioned. The regulation under the "Mining Act Respecting the Medical Certificate of Workmen Employed in Mining and Quarrying Operations".

This regulation has been enacted to replace the old regulation we had before where the only purpose was the detection of tuberculosis. So, the medical examination, legally speaking, could

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have been oriented only to the diagnosis of tuberculosis. On that point, may I tell you that the different asbestos companies didn't wait till this year to start making good medical examinations for workers. Long time before this new regulation, in the early thirties, well-organized industrial clinics were established by the asbestos industry to provide adequate medical services to miners and millers.

This new regulation states that "every workman must undergo a complete annual medical examination including a lung X-ray. A temporary or permanent certificate shall be issued to the workman who is deemed fit, from a medical point of view, for employment in a mining or quarrying operations... The medical examination must be made according to the standards and the requirements of the Workmen's Compensation Commission... A temporary medical certificate is issued to workman who is employed for the first time in Quebec or after an absence of more than 2 years in a mining or quarrying operation... A permanent medical certificate is issued to a workman who has held a temporary medical certificate for at least 24 months and who is deemed fit, from a medical point of view, to continue to hold an employment". It may look odd that we have this distinction between a temporary and a permanent medical certificate. But this is perfectly in accordance with Section 107 or the Workmen's Compensation Act of the Province of Quebec where it is stated "in order that pneumoconiosis may be considered an industrial disease within the meaning of this act, the workman must have been actually exposed

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to the inhalation of silicious dust in the course of his employment in the Province during periods, the total duration whereof amounts to at least two years. So this gives you the reason for a permanent medical certificate only after two years.

Finally, let us speak of this new law, the Bill No. 52, called "An Act Respecting Indemnities for Victims of Asbestosis and Silicosis in Mines and Quarries".

This is a new act and this act is not replacing any other act that may has existed before. Also this act his dealing only with asbestosis and silicosis, and only in mines and quarries. It describes a totally new system to indemnify, to compensate victims of asbestosis and silicosis.

Section 2 of this act states that "the worker suffering from permanent disability resulting from silicosis or asbestosis medically established by a positive diagnosis is entitled:

a) to a fixed indemnity established according to schedule A in proportion to the degree of permanent disability of the worker; and, if he ceases to be employed by reason of such permanent disability.

b) to a complementary indemnity equivalent to 90% of his disposible net income.

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This is the essentials of this new system, very special for the victims of asbestosis and silicosis in mines, but that could be extended eventually to all industries in the Province of Quebec.

It is also said in this act that "if the worker contemplated in Section 2, obtains new employment, whether or not it is an employment on a mine or quarry site, the complimentary indemnity shall be reduced by an amount equivalent to 50% of the disposible net income from such new employment not exceeding 5,000 dollars or if such income exceed 5,000, equivalent to 50% of the first 5,000 and 75% of the remainder".

The right to the complimentary indemnity may be refused discontinued or suspended in the case of a worker who, without valuable reason:

a) refuses a new employment which is offered to him by the commission;

b) leaves such an employment although he could continue to hold it;

c) refuses or neglects to avail himself of the training rehabilitation,or treatment measures made available to him;

d) refuses or neglects to avail himself of the benefits he is entitled to by vertue of any agreement or any other act;

e) or refuses or neglects to furnish the information required for the application of this act.

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Also it is said that the worker shall loose his rights to the complimentary indemnity on attaining the age of 65 years. There is also provisions for indexation of the indemnities on the manner provided by the Workmen's Compensation Act. Finally, a very important section, is section 12:

"Any decision of a medical nature contemplated in section 2, or any decision rendered under section 5 may, within 90 days of the notifying of the decision, be appealed to a council (members of this council are medical experts) or arbitration created under the labour code". This article is very important and is new in the Workmen's Compensation Board. The only thing that could have been done was to ask a revision of the decision by the same doctors and the same commissionners who decided the first time. So they were their own judges in their own case. This won't happen anymore with the new article.

I think that I gave you the most important points of this act. I would like to add that, when government decided to create this new system, the asbestos industry in the Province of Quebec, fully aware that this new system will cost more money to the companies, but conscious of its social responsabilities, gave its complete collaboration to government.

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Well, that's about all with the new regulations in the Province of Quebec concerning health and safety of asbestos workers. I want to thank you for your attention and if you have any questions, Paul and I will be glad to answer them.

Thank you.

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Remarks by Marshall L. Miller
Deputy Assistant Secretary of Labor, Occupational
Safety and Health Administration

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. Miller came to his present position as Deputy Assistant Secretary for National Programs on July 14.

He has broad experience in environmental and administrative procedures in government. Mr. Miller is a distinguished Washington attorney and, prior to joining OSHA, served as assistant attorney general for the Environmental Protection Agency. His academic background includes studies at Harvard, Oxford, Heidelburg and Yale. Mr. Miller is the author of two books.

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You have a distinguished panel of experts coming on in a few minutes so my words will just be a preface to them and be no attempt to claim expertise or authority in this area which, as I confessed here at the table, I really have not dealt with asbestos for about three years. I am just now getting back into it. I assume I don't have to tell you what OSHA is. We are thinking about having a logo now - a contest for a logo - and the best entry that has been submitted for OSHA so far has been one showing a bureaucrat and a worker strangling a businessman.

We are vitally interested in the sort of problems that this industry has had. Maybe not specifically because we hoped to have a proposed standard come out within about two weeks -- the one you have been waiting for eagerly -- but also because asbestos is a case study of some of the things that have gone wrong that we would like to avoid. I don't know if anybody who was working in the shipyards back in WWII knew that they were likely to be exposed to the sort of problems that we now know exist. As I recall, the first studies of asbestosis were made about 1906. But I'm not sure that anybody connected the fibrous particles that they were finding in some autopsies and some studies with mesothelioma and the other neoplasms with what we now know can result. Thus, a whole generation of workers were exposed to conditions which when they surface now we find we can do very little about. What we would like to do, but realistically know it will be difficult, is to be able to detect in advance what will be the next generation's asbestos or vinyl chloride health problems so that we don't have to

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expose people to these substances for a decade or two or three before finding out that we have a problem -- a problem that we may not be able to remedy, once discovered.

I said that this may be too optimistic. I'm afraid that much of the effort that we would have to devote to this would be in the epidemiological area, and I think that our statistics and techniques may not be sensitive enough to discover these things in advance. Maybe they never will be. I think we will also have to try other approaches. One that has been most encouraging of late has been the use, particularly in the area of teratogenicity, of the so called Ames test using bacteria to detect mutigens which could be linked later with carcinogens. This is an area which OSHA, as a group, would like to explore in much more detail.

We are having, I believe for the first time ever, a seminar for our own people and some invitees from other agencies of the government in two or three months on carcinogens. An intensive cram session medical school approach to tell our staff what are the current views on extrapolation of animal data to humans, the existence or non-existence of no-effect levels, the ideology of cancer and these other problems that we are wrestling with daily in our regulatory standard-setting process. We hope that this will be helpful for our people as well as exposing them to the range of views. There is not a single point of view on any of these topics. We hope that, without walking out too confused, to be able to expose ourselves to all of these wide range

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points of view on the subject of cancer. The end goal would be to have a better regulatory process, more intelligent regulatory process, from our point of view. It would also mean, I hope, that when you come in and talk to us we know as much about what you are talking about as you do in some of these areas. And that's something to be desired. I said that I would not have time for questions and answers, but if any of you would like to have a couple of questions, I will field them for a couple of minutes.

Q. Subsequent to the issuance of the proposed amendents to the asbestos standard, what is the likelihood of a public hearing?

A. I believe, under the law, a hearing is left up to you i.e. the requesting of a hearing. In practice, there tends to be a hearing. There is another possibility that there is data, very tentative data that we are looking at now, which could indicate that the present suggested levels themselves might not be fully protective. I know you are eager to hear about that, and I don't know how well that evidence is going to develop within the next couple of months. It is possible that if the hearing process takes awhile that we might have that evidence in and analyzed before putting out a final standard.

Q. What do you have in mind regarding a threshold level or ceiling concentration?

A. The idea of threshold or ceiling is one that we have been wrestling with some time in general. I'm not sure I should speak to

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the standard that we're considering, particularly since there will probably be a good number of changes in it before it goes out. But, in a way, setting a level is a convenient myth. I think we often consider it to be so in the carcinogen area because there is a real question as to whether there is a no effect level and there's a much deeper question that well, even if there might be, do we know what it is in a given area, and the answer is almost always no. So what you do is to take your last reported, lowest reported test, and try to work out a margin of safety down from that. But that number does not represent, although it is often construed to be, a level at which an individual, or a group of individuals, is safe. I think we have to say the same thing for ceiling. So really we are talking about an administrative convenience taken in lieu of anything else that is better. I think that is the sort of problem that is bedeviling us in general. I don't think I want to speak specifically to this standard.

Q. There have been a series of meetings on coming up with a vertical asbestos standard for the construction industry. I'm a little confused just where this fits in, who makes the decision that there will be such a standard and where does that stand?

A. I think the key standard on asbestos is going to be the one that we are talking about right now, the one we are talking about proposing. I suppose, ultimately, I would make that decision. However, that is one that I have not focused on. I am not aware of what is going on in the construction industry. That might be a

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techniques and practices one, similar I suppose to what EPA did. This is not something that I am familiar with.

Q. The concept of action levels seems to be coming up more and more in the standards that OSHA writes. Can you give us your thoughts as to possibly eliminating this concept?

A. Well, we could very easily. But, would you really want us to? One of the advantages of an action level is that the medical records, the monitoring, a number of the actions which are triggered once any level is passed would without the action level be inflicted on anybody who had any exposure to the substance, whatsoever. I'm not sure that that is desirable from your point of view.

Q. Is there any work being done by the Department of Labor on methods of testing? We've had opinions from time to time that our present system of monitoring is not very accurate. Is any work being done on trying to improve the accuracy of these tests or establish any new kinds of tests?

A. In general, we are hoping to work more closely with NIOSH not only on the question of analysis for monitoring but the general analytical procedures, answers to questions, such as what is statistically significant, how much monitoring do you have to do in a given case that will effect our whole compliance area. When I first started working on asbestos, I recall, they were saying the measurements in some cases were accurate only within an order of magnitude plus or minus which I thought was a fairly large range.

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Actually, it was nine times plus or minus, as I recall. I gather that in most of the areas that we are talking about have been significantly improved of late. But yes, you are right, the whole question of monitoring techniques, statistical techniques, is something that we are hoping to spend more time on and if not for your benefit for the benefit of our compliance people who are often thrown out on their own resources -- not knowing exactly what techniques, what procedures to use. Yes, I think we will.

Q. Do you expect to see much more use of the no detectable level type of limit in upcoming standards?

A. I don't think that we have really thought about that question. We are trying to call each one of them as we see it. No detectable level, in effect, was a detectable level as you are aware.

Thank you very much for the opportunity to talk with you this morning.

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Remarks by Daniel P. Boyd, Ph.D.
Director, Standards Development, Occupational Safety
and Health Administration

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Daniel P. Boyd was named Director of the Office of Standards Development in April 1974. For a year prior to joining OSHA, Dr. Boyd owned and operated High Point Research Associates, Leesburg, Va. He was a management consultant to the Departments of Labor and the Army, and the National Bureau of Standards. He also served on the faculty of the University of Southern California's Institute of Systems Management.

Dr. Boyd was a professor of engineering management at the Defense Systems Management School, Ft. Belvoir, Va., and an associate professor of management at George Washington University. He received his bachelor's degree in chemical engineering and a doctorate in materials science from the University of Maryland.

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I want to tell you about my Leesburg farm. When I was asked to take the job that I presently hold, I knew the constraints of the particular position. The biggest constraint was that no matter what position my office comes up with, someone disagrees with it. I find that a very frustrating position to be in. The way that I vent that frustration is going home in the evening, jump in my jeep and drive out to the cow herd and kick a couple of cattle.

I'm going to make an appeal to the press. I haven't had much sleep and I might say some things that -- well, cover me will you?

I have spent the last year and a half trying to assemble a competent staff, and I've made some promises that I probably shouldn't. One of the promises I made to OSHA was that I would assemble a competent staff to be able to address in a sane way the problems of the Agency. I think I have done that. You have met one of them yesterday. Coogie (Kwon) is one of the brightest toxicologists that I have had the pleasure to work with. I hope that he has answered all of the technical questions; I'm not going to answer any this morning. I hope you did have the opportunity to really put Coogie through the mill in terms of specific aspects of the asbestos revision coming out. Some of the members of my staff are here this morning. I would like for you to get to know them because they are concerned with some of the problems that you deal with daily. Frank Memmott is in charge of the construction aspects of occupational safety and health standards. The gentleman who asked the question

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about a vertical standard for asbestos ought to get together with Frank when he has opportunity. Beside him is Ed March. Ed is the head of the maritime area. I understand they use asbestos to cover some kinds of pipes on ships. A colleague of Ed's in the maritime area is Joe Cox.

Bob Mereness came to me four or five months ago, and gave me a copy of the posters displayed to my left and an employee information pamphlet. I thanked him, and I finally was able to read them a few months later. I started reading and I got through a few sentences -- I couldn't believe that an industry or an association would say the kinds of things that were said in that pamphlet. As a matter of fact, I had to go quickly to the back to find out exactly if AIA/NA had sponsored publication of the pamphlet. As far as I was concerned, it was one of the first responsible efforts to alert the asbestos community on the hazards and say some very strong things about the hazards of asbestos. I think you all, as an industry, are to be commended for taking that kind of forthright stand.

There are some other constraints that I thought I should address this morning in order to give you a perspective of why things seem to move so slowly in the standard development area, and also give you a perspective of the decision-making process that will make any standard that is finally put out a reasonable standard. I want to amplify something that Marshall (Miller) said, particularly for my friends in the press. When the Secretary of Labor sets a level --

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that level is a policy decision and in many cases is not based upon exact scientific information. Vinyl chloride, for instance, we don't have epidemiological or other data that tells us with a high confidence level that one part per million is safe for everyone. We hope it is. But we just don't know, and I think the same is true for asbestos. We just don't know what, if any, safe level there is for dealing with chemical, mineralogical carcinogens.

I do not personally like the concept of no detectable level because of the problems of one of the questioners cited. What happens everytime you get a new analytical method that reduces the level even further? Obviously, it puts the industry in chaos. Not having the capability of knowing exactly what is safe and what isn't, I think the courts have held, at least in informal rulings, that the Secretary of Labor has the discretion of through policy call determining what is the acceptable level of risk. I think that's what Marshall was trying to say this morning. He was talking about an acceptable level of risk. With some of the carcinogens probably the only way to protect everyone is to ban them. I don't think we're in the business to do that. It would put the industry completely out of business. But we are in the business of trying to define acceptable levels of risk. As you know, that risk level will be based upon the technicological information, often incomplete, economi data, and of course the feasibility of being able to bring a level to a specified limit.

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The economic parameters is the one that I will spend some time with this morning because it's the one that I have had the biggest frustration in the standards development area. When I talked to you last year, it looked like everything was ready to roll in terms of getting out many of the criteria documents that had been lounging in my offices for a year or two. And then an old friend, an executive order on inflation impact statements, reared its "ugly" head. What I have been able to do, and the reason September 30 looms heavy in my schedule is that I have reached an agreement with the Council for Wage and Price Stability. Anything that I can publish before 30 September I can delay the certification of an inflation impact statement until 30 days before the public hearing. The letter of the law, as you may know, requires that I should publish an inflation impact statement along with each proposed standard. So, here I was, some 35 or so proposals ready to hit the Federal Register. If I hadn't reached this agreement with CMB, it would have basically allowed me to do nothing until an inflation impact statement and/or certification had been prepared. So, I hope, and I'll find out as soon as I get back to my office, that before the 30th of September there will be 10 or 12 health and safety standards in the Register. And one of those will be the revision to the asbestos standard. That's the reason that the 30th of September, the end of the month, as Marshall put it, is an important date for us.

The health area in my office has gone, since I talked to you

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a year ago, from six people to 30. We have successfully recruited toxicologists like Coogie, a medical doctor with a Ph.D. in epidemiology who was supposed to speak to you. I feel I need to say a few words about Marie Ryan. Marie is a very, very bright and conservative scientist. I've noticed that when Marie will analyze several epidemiological studies for me, and I'll ask for her opinion of what a safe level should be, and she refuses to answer me. She doesn't want to get involved in the acceptable risk area, and I understand that as a scientist. Those are the tough decisions that, unfortunately, my office does have to deal. I think that Marie was a little frightened that she would get into those kinds of areas and respectfully declined. I'm sorry for that because I think she would have done a super job. But maybe when she gains a little more perspective and knows that you guys won't throw apples at her, she will join you next year. I have recruited Ph.D., master degree level biologists, chemists, epidemiologists, toxicologists, hopefully individuals who can understand the problems in the literature as it surfaces, particularly in the asbestos area.

As time goes on, we're going to learn more about asbestos. Our Agency has the responsibility of integrating that technicological knowledge in with the other parameters that will impact on the standard. So that's just the way of life that we have to get used to. It's not a comfortable way of life for the regulatee, and I really sympathize with you guys sitting out there representing

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an industry that has the problems of substance like asbestos. The only thing that I can propose to do is be responsible in dealing with any substance and setting any standard. I'm not trying to apologize for taking so long on some of these. I think that it is important to recognize that when an OSHA decision is made it impacts on thousands and thousands of jobs and millions and millions of dollars. I don't think that we can take that responsibility lightly. On the other hand, we do have an obligation to the law itself to provide an acceptable level of risk, and I find that job a very difficult one to do. Thank you.

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Remarks by Charles A. McClure

Supervisory Industrial Hygienist, Office of Compliance

Programming, Occupational Safety and Health Administration

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. McClure has a long and distinguished background with the Department of Labor. He is presently serving as Supervisory Industrial Hygienist and Chief of Division of Occupational Health Programming, Office of Compliance Programming, in OSHA.

He received his masters degree in public health from the University of Oklahoma and is a member of the American Conference of Government Industrial Hygienists.

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I guess the main claim to fame that I have is that I was born in the same county that the Speaker of the House, Carl Albert, was born in, Pittsburgh County, Oklahoma. I was born in a little community called Haywood. Recently while visiting some relatives, I was met at the airport with a sign that said, Haywood, Oklahoma's No. 1 son! Haywood's hardly big enough to even be called a place. It does have a little grocery store, an elementary school, and a few houses.

I appreciate very much your Executive Director, Bob Lorenson. I appreciate working with him; I think he's a very fair person to work with and approaches his work in a very cool way. He didn't ask me to say that, but I felt like saying it anyway; I think you are very fortunate in having him on your staff. I think too that associations such as yours have a very definite part to play in spreading the word about safety and health. I think you'll see a lot more activity from OSHA in the field of voluntary compliance and association cooperation in the future. I think that a good deal of what we have done from a positive standpoint has been due to the work of associations. I have met and talked with some of you and some of you I've talked with longer than others. I have enjoyed that and hope that it has been mutually helpful to you. We are interested in seeing that you stay in business because business means jobs and all of us like to do what we do well. We all, I believe, like to think that we have a stake in protecting American workers from some of these health hazards.

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It is probably hard for you to believe that we do try to look at our standards from a practical standpoint to see if they are enforceable. We try to look at them to see if we think you can understand them, and we give you an opportunity to say whether or not you can understand them. We try to eliminate nebulous words and that type of thing which might make standards ambiguous. We don't always do that to your full satisfaction, but we do give it some effort.

After the standard is written, my office has an opportunity to review proposed standards. We do that, and we have done a good deal of the work already on some of the first drafts of the asbestos standard. After we get these proposed standards, we try to look at them and see what kind of problems the compliance officer might have. We make recommendations that we think are worthwhile in improving the standard, and we start to work right away on writing what we call a program directive. This program directive in many cases has turned out to be as important to some people as the standard itself. I guess I'm a little bit prejudiced on that. We do get quite a few requests for copies of program directives that explain the standard. I think the objective, in which I'm very much in agreement with, is to try to eliminate the need for lengthy program directives. By the way, these program directives are intended primarily for the guidance of our field staff. As you know, practically everything we do and write and say becomes a matter of public record. I believe in the case of vinyl chloride at least and in the case

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of some other hazardous substances the program directive has gone to many, many more people than just those in OSHA. It has gone to associations and other individuals in company management and unions that are interested in the subject.

As I said, my division has the responsibility for putting out program directives on new standards. Also we have the responsibility for issuing interpretations. In the matter of interpretations, I would suggest to you that when an interpretation is properly done, it has the concurrence of the people in the office of standards and it has the concurrence of the Solicitor. It would be good advice for you, I think, if you do need an interpretation of what does a word mean, what does this mean, what does that mean, to get it in writing and get an answer that has full treatment of the Solicitor's approval, standards concurrence, plus compliance concurrence.

I'd like to say just a word about our new Deputy Assistant Secretaries, Messrs. Bert Conklin and Marshall Miller. I have been here quite a while, not quite as long as Ed Marsh back there, but I do have 20 years Federal service. It is indeed encouraging to have people of the calibre of Marshall Miller and Bert Conklin in our leadership. I am of course enthused by the fact that they are giving more emphasis to the health subject, and I guess that is one reason why I'm glad to see them. I think you can tell from the brief moment that Marshall Miller talked to you this morning

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that he brings a degree of sophistication to that office. He brings a background to the office that I believe you will find to be helpful.

I'd like to give you just a few numbers about our compliance effort. From January, 1973, to April, 1975, we did 375 inspections involving asbestos. We did a lot more samples than that but this is the number of inspections. That's not counting the efforts of those states that have agreements with us. I would imagine that their efforts would just about match that of ours. Our activity is picking up somewhat in asbestos. I noticed that in August 1975 the laboratory in Salt Lake City analyzed 128 samples and it is really hard to say how many inspections that represents because in some of the larger firms that we've inspected in the last three years some of them take as much as two months to do a full inspection on. Literally hundreds of samples are collected in a very large plant. We have only done, at least according to our management information system, our data processing system, 20 samples on talc that is not asbestos during the period of January 1973 through April, 1975.

One of the ways we communicate to our field staff is through field information directives and these often are the subject of interpretation or changes in strategies and changes in sampling methods. My office buys the sampling equipment that our field inspectors use. We have some technical guidance over the OSHA laboratory at Salt Lake City. Incidentally, the laboratory in

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Salt Lake City has 23 people now and they were just authorized 10 more chemists. They have at the laboratory, I believe, seven people that hold the Ph.D. degree. Some of them I might say are shamefully low grade levels but they like the work there and I'm hoping that their grade levels will be improved.

I mentioned the program of the field information memoranda, interpretations and our review of standards. I'm sure you are aware that asbestos appears in transportation, longshoring, trucking and railroad hauling of material. I'm sure that some of you are aware that new evidence from NIOSH - the brake relining shops -- places like Sears and Wards and numerous car companies and other shops where brake relining is done, has shown some reasonably high levels in that type of work. We try to convey this information to our field staff. We try to convey it with the idea of some suggested action when it is necessary. I know that all of you have heard of the controversy about talc and tremolite and asbestos and how they relate. We have done some work on that to the satisfaction of some of you and to the dissatisfaction of others. Like Dr. Boyd says, it seems that we're always between a rock and a hard place which ever way we move somebody objects to it. I think that if you could it might be helpful for you sometime to ask yourself what you would do if you were put into Dr. Boyd's position or in my position, if you had to regulate an industry and you had to write standards and to give interpretations. I'm not asking for sympathy necessarily, but I guess I really am. I do think it might help if you just

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consider yourself in that role. We try our best to please the most people we can. We try to keep the objective in mind of protecting people. It's not always an easy job to do. Sometimes we have to figure out where we are going to get the lesser amount of flack and that influences the decision, I guess.

I probably have been accused too many times of being pro-labor or on the side of the working man, but I really think that is what the Labor Department is all about. It is for the protection of working people. The Commerce Department is for the advocation of business and industry. I still feel that, in spite of my pronouncement about that, we try to give a good deal of consideration of what is obtainable, what can be done, what can we expect you to do, and what we can expect our people to do. We have now in the field approximately 200 industrial hygienists, and I'm including those in the states, and we are planning to increase that number considerably. I don't really want to say just how much but there will be some increase in our industrial hygiene staff. Industrial hygienists are for the most part those people that do the work in your establishments. We would appreciate knowing at any time of any type of non-professional conduct or non-professional way of sampling or analysing. We are going into an era now with greater sophistication and statistical methods of sampling and confidence levels and that type of thing. We are trying to build our cases where they are beyond reproach. One of the most refreshing things about Mr. Conklin and Mr. Miller is that they have asked us to give some quick consultation while we are at

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the workplace during inspections. Many of us have wanted to do this for quite some time and we now feel like we have a better road open to do that. In other words, not to hold a class or show a movie, or something like that, but to explain why something is a health hazard to the best of our knowledge. You may disagree, but we'll try to explain it to the best of our ability and we will also try to recommend or at least discuss some different methods of correction. In the past, I'm afraid, too many times we felt all the time we had was to say this is in violation, very little discussion, very little methods of correction were discussed and we would have gone. We welcome, and I'm sure you would welcome, some discussion of corrective measures and some discussion of why a particular thing is hazardous to the best of our knowledge and ability.

We are building now a case file of successful feasible engineering controls and we hope to make this available to the public as soon as we can purify it and get it in a little better condition. Right now it is just a box of cards and they are not in any good order, not indexed, and that type of thing. But compliance officers are asked to send us "before" and "after" case histories, i.e., what were the dust counts before, and what were the dust counts later. What were housekeeping conditions before and what are they later? Where successful feasible engineering controls have been used, in this type of project, we try to show that. We try to show as much as we can, cost information, any information we think that will be

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helpful to us. We have an objective in doing this. It helps us when we are challenged to prove feasibility. But I think probably in the long run the greater help will be in showing you the methods and you will be able to draw on that bank of knowledge. We also search the literature, both American and foreign, and put that into the system. We are hoping to get the system on some sort of data processing basis where it can be quickly retrieved. Right now, it's just a hand system. We do have key words, e.g. asbestos, asbestos cement pipe, that type of thing with a key locator. We feel that the system shows much promise. Our compliance officers have been very active in contributing information, and we think it will be most helpful to you and us.

We are looking very carefully at systems of measuring fibers. We have a saying in Oklahoma that people have kind of tacked on to me, that is, don't pump a free mellon. When you are looking at these methods, you might want to look to see if there is an element of fairness in them for the industry or you might want to see if you had rather go to another method. You may not get the connection there but I think you will if you think about it. The dark field phase contrast method was devised to try and get as much fairness into counting as possible. I'm sure you realize that if we just simply take a sample of dust in the workplace and wet it we are not going to weigh just asbestos, we are going to weigh every dust particle that comes along, including pollon and road dust and everything else. I think that your industry probably has had some

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influence in seeing that we get a fairer method and we believe that there is a great deal of the element of fairness in the microscope counting method. We try not to count those things that are not asbestos, and I know that raises a big field of controversy. but, think how much rougher it would be for you and, of course, it probably would be a different standard if we just simply weighed the material and didn't count it. I don't want to preclude that or prejudice the fact that we may have such an asbestos standard developed. There is a system of correlation between the microscope method and some of the newer techniques of weighing asbestos. They will have to be proven to be fair, and be representative of the workers too. Thank you.

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Remarks by Cyril X. Latty

President, Chambre Syndicale de l'Amiante (France)

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. Latty is President, Chambre Syndicale de l'Amiante, Paris, France, the organization of the French asbestos industry.

Mr. Latty has business interests throughout the world through his firm, Latty International. He is recognized as a spokesman both nationally and internationally for the asbestos industry in his country.

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Mr. Chairman, ladies and gentlemen, I first should like to thank John Marsh, Jack Solon and Tom Dougherty for their kind invitation to participate in your 2nd Annual Industry-Government Conference. The half hour which has been allotted to me will be ample for what I intend to tell you.

Robert Join, general secretary, Chambre Syndicale de l'Amiante, attended your first meeting -- the first annual association meeting last year. He told me how much he did enjoy meeting you all and how interesting all the subjects were.

Please excuse me for I arrived late yesterday evening. The meetings in the U.S. and Canada had already been planned a month ago, and I have had a very tight schedule. As Tom Dougherty suggested, I shall try first to update the situation in my country and then comment on the progress of the Standing Committee of the International Asbestos Information Conference, of which John Marsh has just spoken a few words.

Let me start with the economic situation in France. Of course, we are highly interested in asbestos. Last year in 1974 the asbestos consumption reached 177,000 - 300 million tons; that's ranking fourth in the world after the U.S., Japan and the Federal Republic of Germany. Of course, we cannot take into account Russia and Russian figures as we are not aware of them. And these results I must say were achieved in spite of the general European slowdown.

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Giving you the percentage in case of year 1974 over 1973, asbestos cement would be 12.6%, textiles 1.7%, brake linings 5.5%, friction materials, etc. 16.1%, paper 2.8%, filtration materials 15.6%, cement sheets -- that's the only one that we have minus 1.7%. Meanwhile, as you know, the strong adverse publicity against asbestos was developing and government was tightly regulating our prices. Still, asbestos goods have been in very large demand and larger than the previous year. Going back to the regulations and as you probably know from Robert Join's talk last year, we have at the present moment in France, no special regulation concerning the possessing or the use of asbestos and this very situation exists because: a) the French code of practice contains very thorough and precise provisions for the protection of workers, many of which go back to a decree which is older than we, the decree of 1913, which is the equivalent more or less of OSHA.

b) the French authorities have always been very reluctant and opposed to the fixation of a threshold limit value (TLV as you say) as they have always considered it to be a false safety of standard of measurement.

c) because representatives of the workers are always closely associated by law with the management of the factories and implementation of preventive measures. However, this situation is going to change radically. Just recently, our social security has drafted a regulation concerning the manufacture and use of asbestos goods. This project will probably be tested as we always do in France.

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Then, after perhaps one year or 1½ it can be implemented on a national level. It's interesting to know, you probably know it already, that our association, Chambre Syndicale de l'Aimiante, has drafted, together with the controlling authorities, a method for short term sampling which is very close to the english method. I think that it is a sound, good and safe one, as there has been a lot of measurement and experience gathered by it. As probably you already know, too, we have as an association hired more than a year ago a full time engineer who makes sampling and counts in our plants and acts in an advisory capacity. This, we think, has been a very important step because it has called to people's attention the importance of measures, the importance of following it, and it has enabled us to develop a homogeneous way of thinking, acting and measuring which, as you know, is most important.

Now, I shall come back to the standing committee. In November, 1974, in Paris, we altered the idea of establishing an international industrially sponsored safety commission. As we all were highly concerned with international collaboration between asbestos industries of all types, I then felt we could only properly cope with the situation by pooling our experiences and exchange information we had. Thus, I think being more effective in our efforts for the challenge the asbestos industry has to face. An ad hoc committee has been formed with Alex Cross as chairman, and John Marsh is a very active man on this committee, as you know. The last meeting was held in London on July 8-10 this year. The program of work

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for the standing committee can be broadly outlined in these words. Regular exchange of international information on national asbestos regulations on dust control techniques , follow-up of meetings, conferences, follow-up of medical development, technical development, etc. Last week I had a long phone conversation with Alex Cross, the president. He asked me to tell you how much he regrets not to have been able to come and asked me to bring you his best regards. He asked me to serve on his behalf the last developments and work of the standing committee. It is very good to know that the interest of members of the standing committee is greater than ever. Other important countries will have joined the organization we feel before the end of the year. Among those are Japan; five asbestos associations and two individual companies have approached the standing committee and the interest is shown. It's very large indeed. Then, two significant leading companies manufacturing asbestos goods in Australia have written the committee too. They are trying to constitute a dominant asbestos association and will very likely join the international body before the end of this year.

Now, in summing up the latest works and developments started by the standing committee which are quite numerous. It has only a few months life. A document has been prepared for the European commission. We feel the disposal of wastes is an important problem. The standing committee has consulted its members about this problem, and we have some replies already coming in. Very likely, the standing committee will issue a recommendation for more careful disposal of

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wastes. There's another thing that perhaps you might like to know, about labeling. This again, Alex Cross asked me to convey to you. In the United Kingdom, there have been discussions between industry, the department of labor and consumers protection about labeling. As far as I understand, the voluntary system which has been proposed by the industry will be considered satisfactory by the authorities and there should be no legal requirement. An easily recognizable symbol, warning of dust danger will be used. Attention to subjects on asbestos is likely to be seen from the number of conferences which will be held in the very near future. Brighton, England, 16-18 September which will be followed by the meeting of the Institute of Occupational Health. Then in Rouen, France, there will be a meeting between 22-29 October. Then November 2-5, another meeting of the International Agency for Research on Cancer. Then 21-22 November in Berlin, an occupational health symposium on asbestos. All this, again, shows how much attention is focused on asbestos and how much work has to be done to follow it and know what it is all about.

As we have seen and you will note, asbestos products and materials are widely attacked and subject to various controversies. We believe that there is an increased need for objective basic research and for objective basic and truthful information for people. European nations, we feel, have been very active in asbestos for many, many years. The United Kingdom has had a leading part in this effort. All these nations have international problems,

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they have set up manufacturing methods, measuring methods and established closer practices. Asbestos, we feel, is an international commodity. Its unique properties, its overall importance is such that it seems to me it would be foolish for each nation to try to study it on its own and solve alone the problem without intercommunication and common work on an international level. I think the standing committee will help a lot. I do feel indeed that the resolutions passed at the Paris conference have been a necessary step toward a larger cooperation and coordination of efforts on a work level. We feel we are also directing our power to prevent undue duplication of efforts of research. This all can be more efficient for the benefit of the people and the product. I thank you for your attention.

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Remarks by Noel J. Hendry

Vice President & General Sales Manager, Asbestos Fiber

Johns-Manville Corporation

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. Hendry is Vice President and General Sales Manager, Asbestos Fiber, Johns-Manville Corporation.

Born in Canada, Mr. Hendry obtained a bachelor's degree in geological engineering from the University of British Columbia and a master's degree in geology from the California Institute of Technology. He worked with various mining organizations before coming with the Johns-Manville Corporation in 1949.

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Introduction

When I appeared before this group in September, 1974, I stated in my concluding remarks:

"I should like to comment on the status of the asbestos industry and I will end on a high note -- I can say in a few words that the status is very, very good from a market demand standpoint. As we see 1975, the asbestos industry is pretty much sold out in most grades."

My comments of 1974 were based on the premise of asbestos production being maintained at or above the then existing levels. Unfortunately, the disasters which have occurred were not amenable to forecasting and they have served to change in a very dramatic manner the supply of asbestos fiber.

However, I will comment in more detail on this later. First, I want to show you some slides which will give you a background on production and use on a world wide basis.

Slide 1

World Production

A) Canadian tonnage is reported as shipments rather than production.

Total shipments of all grades from all mines in 1974 were 1,810,749 tons. In addition to the Quebec producers, the following mines were in production in

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all or part of 1974, viz

Cassiar (Northern B.C.) &

Clinton (Yukon Terr.)

Hedman - North. Ont.

Reeves - North. Ont.

Advocate - NFLD.

Shipments from all Canadian producers in 1975 are estimated at 1,200,000 tons. However, the number could be less and will depend on the duration of the strike at Thetford Mines.

B) U.S.S.R.

We believe our numbers on Russian production for 1974 to be reasonably accurate, although our estimate for 1975 is based on the Russian estimates of increased production, these could be overstated.

The major portion of Russian asbestos production is used internally. However, they did export approximately 500,000 tons in 1974 to numerous countries in the world.

C) United States

The high point in U.S. asbestos production was attained in 1973 at a level of 150,000 tons. In 1974, two mines closed down (Pacific & Coalinga) hence the decline to 112,200 tons. Our estimate for 1975 is 99,000 tons or approximately 13,000 tons less than 1974.

D) China

We have revised our figures upwards for Chinese production not on the basis of any firm figures but rather based on

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reports received of Chinese fiber being exported in 1975.

E) South Africa & Rhodesia

We are showing slightly lower production levels of asbestos in both South Africa and Rhodesia in 1975 based on our knowledge of the labor and political situations in both countries. Breakdown of fiber types in S.A.

	1975	1974
Crocidolite (Blue)	165,000	176,000
Amosite	115,500	126,000
Anthophyllite	16,500	27,500
Chrysotile	77,000	66,000

F) Swaziland - T&N Havelock Mine

G) Italy - Balengero Mine

H) Brazil - Cana Brava (North of Brazilia & owned by Pont A Mousson & Eternit.)

They are studying the feasibility of expanding production to 110,000 tons/year.

I) Finland

Production was 100% anthophyllite and the operation was terminated in 1974.

J) Yugoslavia

Total production is short fiber of the Coalinga, California type.

K) India

L) Japan

M) Cyprus

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N) Australia

O) Misc.

Total World Production

1974 - 5,426,749

1975 - 4,985,000 or 441,749 tons lower than 1974

You will note we have not included any production from West Germany which production is obtained from concentrates shipped from Canada (Ungava). The explanation is that we inadvertantly left this number out. In 1974 the total is approximately 90,000 tons and estimated in 1975 110,000 tons.

World Production by Group & Type - 1974

Chrysotile - Groups 1 - 5	2,500,000 tons
Chrysotile - Group 6	1,300,000 tons
Chrysotile - Group 7	1,297,749 tons
Crocidolite	176,000 tons
Amosite	126,000 tons
Anthophyllite	27,000 tons

Notes

Groups 1, 2 & 3 - Chiefly fibers for use in textiles and a relatively small percentage of the total.

Group 4 & 5 - Chiefly fibers for use in asbestos cement products, but includes significant use in friction materials, packings & gaskets.

Group 6 - Again the major portion is used in A/C

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products, although there is a significant use in paper and friction materials.

Group 7 - The usage in this group is very divers. But the major uses include paper, friction materials & floor tile.

Crocidolite - Basically the entire output is used in A/C pipe.

Amosite - The major uses are in A/C and insulation products.

Anthophyllite - The major use is as a filler re-inforcement in various plastic products.

Asbestos - World Consumption

We have shown a balance for 1974 in production and consumption of 5,426,749 tons and in our opinion this balance existed in 1974.

In further detail and to illustrate to you the major regions in which asbestos fiber is consumed, we have broken down consumption as shown on this slide:

North America (Canada, U.S., Mexico Caribbean)	990,000 tons
Latin America (South & Central America)	275,000 tons
Western Europe	1,150,000 tons
Eastern Europe	415,000 tons
Africa	130,000 tons
India & Pakistan	45,000 tons
Japan	350,000 tons

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Asia (Rest)	Indonesia, Iran, Iraq, Israel Korea, Malaysia, Philippines, Thailand, etc.	130,000 tons
Australia & New Zealand		80,000 tons
U.S.S.R.		1,760,000 tons
China		101,749 tons

U.S. & World Consumption of Asbestos

In this chart, we have attempted to establish consumption of asbestos in the U.S. and the world by major product or products grouping and the percentage of consumption is shown in each category:

	U.S. Tons	%	Total World Tons	%
Asbestos Cement products	191,000	21.8	3,750,000	69.0
(Pipe, sheets, siding, shingles)				
Friction Materials				
(Automotive linings & disc components, blocks, clutch facings)	55,000	6.3	120,000	2.2
Asbestos Paper				
(Asbestos felt, latex sheet underlayment, electrical & commercial paper)	330,000	37.7	400,000	7.4
Floor tile	110,000	12.6	210,000	3.9
Paints, roof coatings	65,000	7.4	85,000	1.6
(Caulks, sealants, adhesives & under-coatings)				
Asbestos Textiles	12,000	1.4	37,000	.7

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	U.S. Tons	%	Total World Tons	%
Plastics	18,000	2.0	28,000	.5
Joint Cements	13,000	1.5	15,000	.3
Packings & Gaskets	29,000	3.3	55,000	1.0
Miscellaneous	53,000	6.0	726,749	13.4
Total	376,000	100.0	5,426,749	100.0

The Status of the Asbestos Industry

A) Canada (Terrible)

1) Asbestos Corp. - Dec. King Beaver Mill
40% of production

2) C.J.M. - Jan. Slide in Pit - 20% of production

3) Strike at Thetford - March 18th and Continuing
Affects 50% of Can. Prod.

4) United Asbestos - Trial Prod. about end Aug.
Probably 2 months before regular prod. attained.

5) No other asbestos mines being prepared for production

B) U.S.A.

1) 2 mines - Pacific & Coalinga closed down in 1974

2) 3 mines - V.A.G., U.C. and Atlas producing plus minor prod. in Arizona

C) Rest of World

1) Mexico - New mine to be in production by 1979 at approximately 60,000 tons/yr.

2) Colombia - New mine to be in production by 1978 at approximately 25,000 tons/yr.

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3) Brazil - The Cana Brava Mine production will possibly be expanded from 60,000 to 110,000 tons/yr.

4) Australia - Woodsreef continues to operate on a receivership basis.

5) Russia - Expansion of production continuing but, also, they are expanding their A/C production facilities at a rapid rate.

Environmental Factors & Their Effects

As I stated a year ago, users of asbestos fiber in the U.S. are knowledgeable about the existing OSHA and EPA regulations and the 2 fiber/c.c. requirement on July 1st, 1976. Certain revisions by both agencies are still pending but should be clarified shortly. On this basis, users have spent the money or are doing so to revise asbestos handling methods to meet these regulations.

Certain problems continue to exist, however, relating more to the end use of the asbestos containing product rather than in its manufacture, e.g.

A) Insulation Products - Little, if any asbestos is now used in this product category due to the "non-locked in" condition of asbestos.

B) Joint cements - Environmental conditions can be controlled in the manufacture of this product but the problems relate to its application: most manufacturers of joints cements are producing an asbestos free variety

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and within a year or so asbestos will not be used in this product.

We are not aware of any other product categories in which the use of asbestos is in jeopardy.

During the past year environmental regulations for asbestos have been imposed in Ontario of 2 fibers/c.c. and these relate to manufacturing as well as mining and milling operations. These regulations will impose some hardships and they did result in a J-M decision to close the Reeves Asbestos Mine in N. Ontario earlier this year. It is expected that a federal regulation on asbestos will be legislated in 1976.

Regulations governing the use of asbestos have been or are being imposed in Britain, various countries in Europe, Japan and Australia and no doubt other countries will follow. This is as it should be as asbestos dust and, in fact, any dust if inhaled in excessive quantities over extended periods of time is a health hazard.

The Future

We are very optimistic regarding the growth in demand for asbestos fiber over the next 5 years and the next 10 years. We estimate overall growth in the range of 4 to 4.5% per year over these periods, with the growth in use in A/C products exceeding that in all other areas of use.

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We are not as optimistic regarding the growth in supply over the next 5 years based on our knowledge of probable mines, expansion plans for existing mines and new prospects.

Our conclusion is that demand for gps 4, 5 and 6 over the next 5 years will exceed supply. However, this situation will provide the need to review feasibility studies of existing prospects and provide the impetus for exploration programs to find new deposits. Thank you.

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Remarks by Guy G. Gabrielson, Jr.

Chairman of the Board, Nicolet Industries

at

Asbestos Information Association/

North America 2nd Annual Industry-Government Conference

September 10-11, 1975

Mr. Gabrielson is Chairman of the Board, Nicolet Industries.

He is a lawyer, businessman, and civic leader. Mr. Gabrielson is well known in business and governmental circles.

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Thank you Tom (Dougherty) for your kind remarks. I don't suppose it's polite to contradict the man who introduces you, but I had a different impression of the way in which I was selected for this role. This is my understanding of the reason why I was selected. There were a series of meetings held by the planning committee for this conference to plan the agenda and select speakers. A series of telephone calls also were made in the process. At one of the last of these exchanges, Tom said we have most of our program complete now, most of our speakers have consented to appear, and our panels are all established, and the subject matters have been arranged. All we need is someone to close the conference. Bob Mereness said, "I would like to develop some mechanism for testing the effectiveness of the conference. I'd like to call upon somebody who doesn't have technical competence in any of the areas to be discussed. Then, when he makes his talk, we'll find out how much he understood and get some measure of how good a job we have done." At that moment, Joe Hall said, "I have the man for you. To my knowledge, Guy Gabrielson doesn't have technical competence in any area." The wisdom of their choice will be evident when I tell you that last night in my room here in the hotel I spent some time practicing the pronunciation of neoplasm, epidiomological surveys, mesothelioma, and carcinogen, or is it car-ci-nogen?

To give you an idea of the confusion, and perhaps the internal ambiguities, with which I have faced some of the comments which I have heard in the last two days, I would like to say a

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little bit about part of my own background and experience. I have an uncle, Uncle Ira, who spent his entire life in federal government service. He started out as a field biologist in the biological survey of the Department of Agriculture. This group of men later was moved over to the Department of Interior during the Roosevelt Administration. They became the U.S. Fish and Wildlife Service and their first leader was a cartoonist named Ding Darling. I don't know if any of you remember Ding Darling's cartoons, but he was the first chief of the U.S. Fish and Wildlife Service. The second chief was my uncle, Uncle Ira, and he remained in that post until he retired from government service. Uncle Ira had no sons so he was kind enough to take his young nephew with him on field trips. During those trips I met with him and his colleagues and I heard expressions like environmental damage and ecological balance, expressions that were not at that time known to the public at large. As a matter of fact, if you had said to me at that time that these issues which seemed rather technical and dry to this young kid would ever become burning social or political issues, I would have said you were crazy. But that's what's happened.

My Uncle Ira has a rather pragmatic view of these things and some of that, I think, has rubbed off on me. For instance, he does not consider man to be an intruder on the environment. He considers man to be another species which is part of the total ecosystem. And the steel mills and asbestos plants which man built are a natural expression of his life as the ant hill is an expression

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of the ant's life. It is his belief, and I would say the belief of many of the people who we've heard over the last two days, that man will continue to do pretty much as he pleases until he damages the environment in such a way that he damages himself. And I think my Uncle Ira would say, and he's still alive and very alert at age 86, that man has reached that point now, and probably gone beyond it. In many cases, however, he might not yet be aware of the fact. I suspect that some of our panelists and speakers would agree with my Uncle Ira.

He said many things -- an example would be this. He says, you know, rivers are sewers. They always have been sewers. Long before man walked on the earth, when brontosaurus was wading in the river, he defecated and the river took away the waste and worked its biological magic on it. He said the only concern would be if we overburden the rivers so that they cannot perform their function as a sewer -- their natural function as a sewer. I wonder, perhaps, if that is not what happened to brontosaurus. Maybe he became so numerous that he overburdened the rivers and that's why he's extinct. And perhaps, if that should be the case, there's a lesson we can learn from brontosaurus.

Another element of my background, I suppose, is my experience shared with my own father. My dad, during a large part of his career, was a politician. From this experience I learned politics, at least in elected politics, no issue that cannot be restated in the currencies

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of political contributions or votes is really not an issue at all. I was trained as a lawyer and I practiced law for ten years. From that experience I learned the magic of language. How sweet it is to play with the turn of phrase or the shade of meaning or to develop complex language to solve complex or sometimes even simple problems. I would say parenthetically at this point, that on behalf of my profession I would like to thank the environmentalists for the recent explosive expansion in the market for legal services. My profession is entering upon a new era of prosperity and in large measure we have the environmentalists to thank.

But most of my career has been in business. And from this experience, I have learned some hard lessons as well. I think I would like, at this point in my statement, to make clear my personal commitment to the free enterprise system. There is no question in my mind that it is the most effective system for deriving the greatest benefit for any society. I do not believe that any profit, no matter how large, which is earned in a system open to competition, can be called either excessive or unconscionable. Profit is the mechanism by which we satisfy the demands of the public. If profits are large and the system is open to new competition, those large profits will either lead the producers to expand their capacity or will induce others to enter the market, provide the goods and services which the public have bid for through the profit system, and the profits will come down. I believe that the free market system is the best practical application of democracy. There is no more effective way

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to vote than through the use of the free market system. By that system we can tell our suppliers just what we want, in what quantity, and we can vote with our purchase dollars in a very effective and emphatic way.

However, there are some of the things in life which cannot effectively be communicated through the free market system. The demand for some of the amenities of living cannot be expressed or communicated in this way. And we were dealing during the last two days, I think, with two of those demands. One is the health and safety of our production employees. If you stop and think of this issue in practical terms, you can see that the free market isn't going to provide this amenity very effectively. The reason for that is that I may be very much concerned about my own health and safety as an employee in industry, but I am a great deal less concerned about the health and safety of other employees who may be making goods or providing services that I enjoy. It isn't really very practical for me, even if I have a genuine concern for the health and safety of other employees, to stop buying goods or buying services in the hope that I will force the different producers to look to the interests of their own employees. As a matter of fact, to make such a project effective, I would have to organize and develop a system of cooperation with other consumers who felt as I did so that we could together boycott an industry or all industry until they provided for the safety and health of their employees.

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Another objective, I think, which is important to the public today is the preservation of our environment. Again, my natural tendencies toward selfishness will stand in the way of my effecting adequate communication of that wish through the market system. The reason is that I don't want that urea-formaldehyde source a half mile from my house. But I don't mind if it is a half mile from your house provided you live 75 miles away. I may be reluctant to pay more for the product of that factory to keep the stink out of your living room. However, I think we all must recognize that a large part of our public does want greater health and safety for industrial workers, and does want a better environment, and the only practical way that we've been able to find to achieve that is to let government enter the picture. That really is why we are here today.

Well, so much for my biases and the ambiguities of the background with which I face the proceedings of the last two days. Let me take my final examination now. Here are the things that I think I will take home with me as a result of listening to the speakers and to the panel members. Whatever standards may be set for the handling of asbestos, our commitment as an industry must be always to try to exceed them. To try to do the very best we can to keep the levels of asbestos dust in the factory environment low. I think this theme was sounded by Jack Solon even before the conference began when he addressed the AIA/NA Annual Meeting. He said in his remarks, we will not knowingly affect the health or life expectancy of any of our employees. I subscribe to that statement. I think

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some of our other speakers, perhaps Dr. Albert, by implication, would have amended that statement to say we should not even unknowingly affect the health or life expectancy of our employees -- in other words -- we should keep dust levels as low as we feasibly and economically can, just in case. The reasons why we should do that, I think, were amply stated during the course of this conference. And some of them were very complex indeed.

Because of the long latency period with some of these diseases, it is exceedingly difficult to establish the relationship of cause and effect, between exposure and disease. Because many of these agents or factors operate together, it's difficult to sort out the agent which is responsible. It's difficult to tell if one has to be combined with another to create a particular health or biological effect. It's also conceivable that a material which is safe today can become dangerous tomorrow because we use it in a different way, we use it in different quantities, or we have changed some other factor in the work environment which creates the biological effect. Because we may not know that for 20-30 years at which time disease may be evident and disease may be irreversible, we face the ethical imperative, in my opinion, of keeping all contaminates in our factories at the lowest feasible level.

At the same time, I am still a businessman, and we cannot ignore economics. I was pleased that Dan Boyd's remarks took careful note of that fact. If asbestos were the only dangerous

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material being used in industry today, we probably could agree that we would accept the economic and social cost of banning asbestos from all fronts. It would be quite expensive, but I think it could be done if asbestos were the only material that is suspect.

But we know from the statements which we have heard in the last two days that asbestos is not the only material that is suspect. The list of toxic and carcinogenic materials or suspect materials is very long indeed. And I suspect that it's going to grow longer. If we are going to try to achieve absolute safety, we would have to ban all these materials from use in industry. We would, in my opinion, destroy our industrial society; we could not even support the population of the world as it is today. We would, therefore, have to shoot or hang perhaps three fourths of the people in the world. And although I am sure that all of us, because we are exceptionally gifted intellectually, would be among those who would not be hanged or shot, it does not seem very practical to eliminate three fourths of the people of the world in order to escape the hazards of death from industrial materials. If, in fact, as Dr. Albert seemed to be arguing, we are dealing with a linear relationship between dose and response, zero risk is achieved only when we have zero asbestos fibers. And if, as he said, asbestos is a material which is not easily dispensed with, then, like it or not, we are faced with a cost benefit analysis situation. We must face squarely up to that responsibility, even though we must do it in the presence of impassioned references to the sanctity of human

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Another point, I think, I will take with me from this meeting is this: we must accept the fact that we are dealing with a political problem as well as a scientific and economic problem. We must accept and live with the fact that legislators want to be elected and re-elected. As a consequence, they sometimes will enact legislation which is cumbersome, difficult to enforce, and possibly even unfair. They may, some of them in any event, vote for such legislation knowing that it is flawed in this respect. But they then will hope that some administrative person in the federal government will find a way to write the regulations or enforce the legislation so that its unfair or negative effects may be avoided.

We should accept the fact that administrative and enforcement personnel must often accommodate to the wishes of those who provide the funds for their departments. And they are forced often into difficult or compromising situations. In attempting to deal with them, we should not close our eyes to this factor either. We have to recognize that some labor leaders fear that a posture of reasonable compromise will be interpreted as a lack of commitment to the interests of their constituents. Many of them are in difficult positions and that is a political factor that they face, and we must recognize it as we deal with it. We must recognize that researchers working in this field are sometimes inclined to interpret their data to find a problem, instead of finding no problem, because if there is

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no problem there is no more justification for the continuation of their program. And, lastly, we must recognize that managers of business are political animals as well.

I have to believe that there are somewhere some unsung heroes working in the background because, though we may take exceptions to some provisions of the regulations, they have generally as far as I'm concerned proven to be working. They are rules with which we can comply, so somebody is doing the job in all this confusion. This morning Ray McClure invited us to put ourselves in his position. Oddly enough, I had been doing that just before he issued that invitation. I sat there and I thought, I often thought my job was a tough job, but I'm not so sure I'd want the job that those fellows have. When you stop to think of it, the legislative mandate which has been given to EPA and OSHA is really overwhelming. It's impossible. I wouldn't believe that if each of those agencies had 500,000 employees they could deal adequately with all the problems they are supposed to handle under the mandate of the legislation under which they operate. Taking the asbestos problem as an example, you have the OSHA people who can say, and say honestly, we don't know how asbestos affects health; we don't know how much if any asbestos dust can be tolerated by the human organism; we don't know how to measure adequately the concentration of asbestos dust in the factory environment; we don't know whether the measurements we have are adequate proxy for the total dust that is present; we don't know at this juncture how industry could comply with a particular standard

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if we adopted it; we don't know at this juncture how much it would cost the industry to comply; we don't know what effect that compliance might have on the value of the shares of the industries effected; and, we don't know how many jobs might be destroyed by promulgation of this regulation or how many jobs might be replaced or displaced. And yet, we have to come up with a regulation, and we have to come up with it by 4:30 next Wednesday afternoon. What a job! I have great respect for the task they are called upon to perform.

There is one other thing that I have observed or have thought during the course of the last two days, and that is that we may have failed to identify the real problem with which we have to deal. Or if we haven't failed to identify it, we failed to give it adequate attention. I think that this aspect of the total situation is something that would be very important to the industrial members of this audience. The real problem may not be asbestos, it may be people. I'm tempted to draw my analogy from the opponents of gun control. They say, guns don't kill people, people kill people. Maybe we can say in one sense that asbestos doesn't kill people, people kill people. I mean this in this sense -- no matter what our regulations for handling asbestos may be, no matter how sophisticated our engineering controls and our work practices, all will be to no avail if they aren't properly implemented and used. It is in this area that I have had some of the most frustrating of my personal experiences. I'm sure others in business can cite similar examples.

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I can recall one day when our vice president for manufacturing came back from one of our plants and he was talking to the operations manager and he said, "Lou, if I see another guy dry sweeping in that plant you and I are going through and break every 'blank blank' broom in the place." How many of you have heard that? Recently, one of the fellows in Nicolet who takes the dust samples said to me, "I was down at plant 2 yesterday and Ed who works on the time saver sander wouldn't put on the sampler." I can't understand why he was so excited about it. He was absolutely emotional, he was damned if he was going to wear that thing. I said, "What did you do?" He said, "I went to Nick, the foreman." I said, "What did Nick do?" He said that Nick came over and said, "You wear it or you're fired." I said, "What happened?" He wore the sampler. I got my sample. Happy ending to the story? Oh no, Eddy had the last word because when the slide was put under the microscope, there was his thumb print.

I can think of another recent example of a young engineer who had an idea for improving the physical properties of one of our products. It involved the change in the processing method that was used. Well, that was all well and good, but he was very eager to put this change into effect. So he instituted it on his own volition, bypassing the dust control system, because the dust control system would have to be redesigned to accommodate the changes in procedure. It was only by chance that a routine inspection turned up the dust count after that change. I'm not even going to tell

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you ladies and gentlemen what that dust count was. It nearly sent me through the ceiling of my office.

Lastly, I would like to talk about what I call the "Uncle Charlie" syndrome. Now "Uncle Charlie" is the guy who worked in the plant for 40 years back in the days when dust was so thick you couldn't see across the room. "Uncle Charlie" today is 87 years old, and he works part time in the post office and feels just great. I think we have all heard the "Uncle Charlie" story. How do you deal with this kind of situation?

I don't think it is enough to say or to put up a sign or label that says, asbestos may be dangerous to your health. Avoid dust, don't smoke. I think we have a much more difficult task to face. It's been my experience in parallel situations that people don't respect rules of this kind unless they understand why it's true -- why the thing has to be done. That means that we have to face up to the problem of talking about the long latency period of this disease. We have to teach the guy that, "Look, if it takes 20 years to develop mesothelioma and you die as a result, you are just as dead as if you fell off the ladder and killed yourself." True, one is an immediate event, following upon the causative factor. The other takes a long period of time. We have to try to sell that difficult position. This is an area in which AIA/NA can perform a very valuable service. It is beginning to perform this service. But we can't delegate it to AIA/NA alone. The

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responsibility to each one of us as a manufacturer to teach and teach and explain and explain so that finally these fellows will realize that maybe "Uncle Charlie" was an exceptional individual who wasn't sensitive to this fiber. And, by golly, the fact that he didn't get any disease or no disease is apparent in him doesn't necessarily mean that I won't. It's prudent, therefore, for me to take normal precautions.

I had one further feeling as a result of this two days, and this is a very personal feeling. I think in a very practical sense, if we have felt frustrated by the time and money which we have had to dedicate to the process of establishing an asbestos standard, the worst is probably behind us now, certainly, when we have gone through the review of the proposed revision which is coming out this month. Because, we were the first, perhaps because asbestos begins with "A," to receive attention. For a while, we were the only ones receiving attention and all the initial mistakes were made in handling the problem of asbestos. I hope that other materials will profit from the experience that's been gained in setting the asbestos standard. Nevertheless, we have been through that process, and I think the fact that there are many other materials to be treated in the future means that we will be spared the burden of extensive further work on our asbestos standard.

It would be unbecoming of us, as an industry, to rejoice at the fact that other materials may now have their day, their

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difficult days. Nevertheless, it is true that, perhaps, we will be spared some of the expense and time and money that we have had to dedicate to this problem so far. It would also, however, in my opinion, be equally unbecoming and in fact unethical, for us as an industry to relax our efforts because we have now passed through the standard setting or almost passed through the standard setting stage. I think it behooves us as an industry to use the time and money that will be released by conclusion of this process to improve conditions in our factories to the maximum possible extent.

Noel Hendry expressed some degree of optimism this morning about the future of the asbestos industry, at least, from the demand side. And I share that optimism. I now feel, after having been through the experience of the setting of the asbestos standard and the attempts to implement it, that for the great majority of the applications of asbestos there will be no viable substitute. I no longer seriously fear that the industry will be destroyed by this process. In fact, I would suspect that if we reassemble for a conference like this 10 years from now we will be saying at that time we lack data, we don't have adequate diagnostic tests, we are not sure about the health effects of asbestos, but we will still be here. Our industry will still be alive and thriving. We will have learned to live with our problem. We will be in business and we will be in business at a profit.

I'm sure at times some of us have felt put upon by the

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necessity of going through this standard setting compliance procedure. I'm sure sometime some of us wish that we had never heard the words environment or ecology. But environmental concerns are not new. I understand that when they were surveying the lines to which the armies in the Sinai were to repair following the signing of the recent truce, they discovered a cave with some old scrolls in it. Those scrolls were removed and translated and they found that the story of Moses reaching the Red Sea had been incompletely reported in scripture. It seems that when Moses arrived at the Red Sea he prayed to the Lord and asked for his help in assisting the Israelites in escaping from the Egyptians. The Lord answered his prayer in reply and said, "Yes, Moses, I can indeed part the waters of the Red Sea so that you may cross on dry land, but I must tell you that the law requires that first you must file an environmental impact statement." Thank you.

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2nd ANNUAL

AIA/NA INDUSTRY - GOVERNMENT CONFERENCE

September 10-11, 1975

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James U. Crowder, Ph.D.	Environmental Protection Agency
Gordon G. Robeck	Environmental Protection Agency
Allen Cywin	Environmental Protection Agency
Joseph K. Wagóner, D.Sc.	NIOSH
Lawrence A. Plumlee, M.D.	Environmental Protection Agency
Byung K. Kwon	OSHA
Aurel Goodwin, Ph.D.	MESA
Joseph L. Goodman, M.D.	Certain-teed Products Corp./Raybest Manhattan, I
Paul-A. Filteau	Quebec Asbestos Mining Association
Michel Lesage, M.D., LL.L.	Quebec Asbestos Mining Association
Marshall L. Miller	OSHA
Daniel P. Boyd, Ph.D.	OSHA
Charles A. McClure	OSHA
Cyril X. Latty	Chambre Syndicale de L'Amiante(Fra
Noel W. Hendry	Johns-Manville Corporation
Guy G. Gabrielson, Jr.	Nicolet, Inc.

Members and Guests

James W. Armstrong	The Bendix Corporation
John Autry	Johns-Manville Corporation
Harry Babilon	Asten-Hill Mfg. Company
George Barge	Atlas Asbestos Co. (Montreal)
W. H. Beasley	Cement Asbestos Products Company
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James U. Crowder	Environmental Protection Agency
Allen Cywin	Environmental Protection Agency
Andre Cloutier	Dept. of Industry (Quebec Govt.)

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Richard T. Davis	Frank C. Frantz & Co.
Russell A. Dawson	"Job Safety & Health Report"
Virginia Detgen	AIA/NA Staff
James A. DeVenne	Brown Insulating Systems, Inc.
C. R. Dickinson	Bird & Son, Inc.
Morton Davis	Karnak Chemical Corporation
Sudhakar Dixit	Garlock, Inc.
Thomas A. Dougherty	Certain-teed Products Corporation
Edward W. Drislane	Friction Materials Standards Inst.
George F. Dusty	Bird & Son, Inc.
Dennis Eldred	Vermont Asbestos Group
Maurice Eastin	Environmental Protection Agency
Doris M. Fagan	"Asbestos" Magazine
William Fassuliotis	GAF Corporation
A. H. Fay	National Gypsum Company
E. H. Feierabend	Abex Corporation
Edmund M. Fenner	Johns-Manville Corporation
Gershon W. Fishbein	"Occupational Health & Safety Letter"
Frank C. Frantz	Frank C. Frantz & Co.
Kenneth S. Freeman	U.S. Gypsum Company
Earl W. Gagan	Department of Environment (Canada)
M. D. Gidley	Abex Corporation
Samuel Gibson	Food & Drug Administration
Joseph G. Hall	GAF Corporation
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G. J. Hildebrandt	Jim Walter Research Corporation
A. R. Hooker	The Flintkote Company
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M. Hubal	Thiokol Corporation
Joseph C. Jackson	Asbestos Cement Pipe Producers Assn.
D. L. Juhl	Raybestos-Manhattan, Inc.
Eileen Joseph	Bureau of National Affairs
Robert H. Kelly	Tremco, Inc.
Walter J. Kissel	Raybestos-Manhattan, Inc.
Malcolm Korach, Ph.D.	P.P.G. Industries
William H. Krebs, Ph.D.	General Motors Corporation
William Krucke	Raybestos-Manhattan, Inc.
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James McAlear, Ph.D.	EMV Associates, Inc.
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Richard Michon	Quebec Asbestos Mining Association

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Jerry Moore	National Gypsum Company
C. G. Morgan	North American Asbestos Corp.
William H. Mortonson	The Flintkote Company
Mary Monfred	Asbestos Cement Pipe Producers Assn.
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Mr. Mori	Nippon Asbestos Co.
Girard Ordway	Bureau of National Affairs
A. J. Paradise	Chemical Sealing Co.
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Fred Panzer	Tobacco Institute (Washington, D. C.
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David Riikoven	U. S. Coast Guard
John Riopelle	The Bendix Corporation
Lee L. Rose	Thiokol Corporation
Rick Rew	Ruco Materials, Inc.
Y. Sato	Nippon Asbestos Company
Robert J. Schuttler	Hooker Chemical & Plastics Corp.
Martin Sendecki	Congoleum Industries, Inc.
Raymond E. Shapiro, Ph.D.	Food & Drug Administration
William S. Simpson	Raybestos-Manhattan, Inc.
Thomas Sliter	Government Research Corporation
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F. J. Solon, Jr.	Johns-Manville Corporation
A. Staszak	Maremont Corporation
Ray J. Steinfurth	Intern'l Assn. of Asbestos Workers
George H. Stout	Congoleum Industries, Inc.
Nancy Stroup	Environmental Defense Fund
Richard Thomas	"Engineering & Mining Journal"
June Thompson	Consumer Product Safety Commission
William C. Thurber	Union Carbide Corporation
G. John Tysse	National Association of Manufacturer
C. S. Thompson	R. T. Vanderbilt, Inc.
George Vogel	National Assn. of Filter Mfgrs.
Harry H. Wagner	Molded Materials Co. (Carlisle Corp.
Richard C. Wareham	Special Asbestos Co.
Isaac C. Weaver	Raybestos-Manhattan, Inc.
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J. Craig Wilson	Nicolet,Inc.
David B. Woodbury	Foseco-Minsep Inc.
C. Fred Workman	Nicolet, Inc.
Wayne Wright, Esq.	P.P.G. Industries
Frank Zimmerman	National Gypsum Co.

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