OCCUPATIONAL SAFETY AND HEALTH

HEARINGS

BEFORE THE

SELECT SUBCOMMITTEE ON LABOR

OF THE

COMMITTEE ON EDUCATION AND LABOR

HOUSE OF REPRESENTATIVES

NINETIETH CONGRESS

SECOND SESSION

ON

H.R. 14816

A BILL TO AUTHORIZE THE SECRETARY OF LABOR TO SET STANDARDS TO ASSURE SAFE AND HEALTHFUL WORKING CONDITIONS FOR WORKING MEN AND WOMEN; TO ASSIST THE STATES TO PARTICIPATE IN EFFORTS TO ASSURE SUCH WORKING CONDITIONS; TO PROVIDE FOR RESEARCH, INFORMATION, EDUCATION, AND TRAINING IN THE FIELD OF OCCUPATIONAL SAFETY AND HEALTH; AND FOR OTHER PURPOSES

HEARINGS HELD IN WASHINGTON, D.C., FEBRUARY 1, 20, 28, 29; MARCH 5, 6, 7, 8, 11, 12, AND 14, 1968

Printed for the use of the Committee on Education and Labor

CARL D. PERKINS, *Chairman*

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OCCUPATIONAL SAFETY AND HEALTH

THURSDAY, MARCH 7, 1968

HOUSE OF REPRESENTATIVES,
SELECT SUBCOMMITTEE ON LABOR,
COMMITTEE ON EDUCATION AND LABOR,
Washington, D.C.

The subcommittee met at 10:25 a.m., pursuant to recess, in room 2200, Rayburn House Office Building, Hon. James G. O'Hara presiding.

Present: Representatives O'Hara, Ford, Burton of California, Esch, and Steiger.

Staff members present: Jim Harrison, director; Marilyn Myers, clerk; Nancy Tyler, assistant clerk; Dr. James Wason, Legislative Reference Service, Library of Congress; and Mr. Michael J. Bernstein, minority counsel for labor.

Mr. O'HARA. The Select Subcommittee on Labor of the Committee on Education and Labor will come to order.

The purpose of our meeting today is to continue our hearings on H.R. 14816, the occupational safety and health bill.

STATEMENT OF DR. IRVING J. SELIKOFF, DIRECTOR OF THE ENVIRONMENTAL SCIENCES LABORATORY, MOUNT SINAI SCHOOL OF MEDICINE, CITY UNIVERSITY OF NEW YORK

Mr. O'HARA. Our first witness this morning is Dr. Irving J. Selikoff, director of the Environmental Sciences Laboratory, Mount Sinai School of Medicine, City University of New York.

Dr. Selikoff, we are looking forward with great anticipation to your testimony and to any help you can give us in our consideration of this legislation, and we would appreciate it very much if you would proceed, and we will insert your prepared statement at this point in the record.

(The statement follows:)

STATEMENT BY IRVING J. SELIKOFF, DIRECTOR, SCHOOL OF ENVIRONMENTAL SCIENCES-LABORATORY, MOUNT SINAI SCHOOL OF MEDICINE, CITY UNIVERSITY OF NEW YORK

Mr. Chairman and members of the committee, my name is Irving J. Selikoff. I am Professor of Community Medicine at the Mount Sinai School of Medicine of the City University of New York, and Director of its Environental Sciences Laboratory. I am Editor-in-Chief of "Environmental Research", a recipient of the Lasker Award in Medicine of the American Public Health Association, a Diplomate of the American Board of Preventive Medicine. I am President-Elect of The New York Academy of Sciences, a Member of its Scientific Council, and have served as Chairman of its Division of Environmental Sciences.

I detail these responsibilities both as identification and as an index of my professional and scientific interest in the problems with which this Bill is con-

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cerned, but I must confess at the outset that while my studies and research have been professional and scientific, the applications which may be derived from them are emphasized by my responsibilities as a citizen and a physician. The data I shall present are rigorously scientific; but I hope you will interpret them not only as cases in a tabulation but as persons whose health and lives are our responsibility.

I propose to describe to you my research experiences with one group of workmen in this country, so that you might use it as an example or as a yardstick against which to evaluate this proposed Bill, to test whether it is necessary or unnecessary, whether it goes too far or not far enough, whether it is sorely needed or will prove superfluous. Because if this Bill is not the answer, an answer must surely be found for the difficulties I will review.

For the past six years, I have been investigating occupational health hazards among insulation workers in our construction industry. These men apply the thermal insulation to pipes, ducts, boilers and other structures in buildings, factories, shipyards and other facilities. They are self-reliant, skilled craftsmen. The first union of insulation workers in the United States was formed in New York City in 1884 under a charter issued by the Knights of Labor (predecessor of the American Federation of Labor) as "The Salamander Association of Boiler and Pipe Felters." Partly from these beginnings, the present union of insulation workers in this country was chartered in 1910 by th AFL as The International Association of Heat and Frost Insulators and Asbestos Workers. They are an important part of the construction industry. The trade is an important one and it is not too much to say that modern construction and modern industry would halt without their work. The union has some 18,000 men on its rolls and there are probably almost an equal number of insulation workers who are not members of this union, often because of conditions of their work, as being employed in maintenance work, doing insulation work as part of other occupations, being members of other unions or by virtue of doing special insulation applications as, spraying.

During the course of their work, these men use many materials, some of them mineral or of other inorganic nature. While we have had little knowledge concerning possible adverse effects of most of the materials with which they work (in part, because of their rather recent introduction and inadequate opportunity to observe the presence or absence of such effects), one of the materials with which they work has been under suspicion for some time. I refer to asbestos. This mineral fiber, with unique characteristics and of great value in our industry, is found in a number of the products which these men use in their work and have used for more than seventy years.

In 1924, Cooke in England described a case of severe lung scarring—asbestosis—who had spent 20 years weaving asbestos textile products. In the next decade, numerous similar cases were observed, so that by the mid-1930s the hazard of asbestos as a pneumoconiotic dust was universally accepted. Textile factories in this country were also studied and our Public Health Service fully documented the significant risk involved in asbestos textile factories in the report by Dreessen and colleagues in 1938. Precautionary measures were urged in this report and elimination of hazardous exposure was strongly recommended.

Unfortunately, implementation of the recommendations was haphazard and inadequate and the conditions and dangers, recognized and described 40 years ago, are still with us.

It is an unhappy reflection on all of us—government, public health authorities, the medical profession—that at this time in the United States in the 1960s, 7% of all deaths among insulation workers are due to a completely preventable cause, pulmonary asbestosis.

It may be of interest to outline the studies which have demonstrated this continuing, disabling and fatal hazard. With my colleagues, Drs. E. Cuyler Hammond and J. Churg, I have been studying the health experiences of insulation workers in the New York-New Jersey metropolitan area. Locals 12 and 32 of the IAHFIAW. On December 31, 1942, these Locals had 632 members. We have followed each one of these men from that day to the present. During these years, 27 men have died of asbestosis, of a total of 367 deaths. Since there is no other cause for pulmonary asbestosis but the inhalation of asbestos fibers, these deaths have been unwarranted and unnecessary. Moreover, many of the men who have not been so badly affected as to die of the disease, have been and are disabled to a greater or lesser extent. Thus, more than half of the insulation workers examined by me with more than 20 years from the onset of their work, have the abnormal X-rays of asbestosis and almost one-third have shortness of breath of some degree.

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It is evident that, somehow, we have failed these men. They had every right to look to their government and public health authorities, and to the physicians and scientists who guide them, for protection at their work. They were not given this protection.

If the problem were to be limited to this difficulty, it would be bad enough and sufficient spur to remedial action. However, these workmen face an even greater and more worrisome hazard. There is hardly an asbestos insulation worker in this country who is not concerned with the possibility that cancer, induced by the asbestos to which he is exposed, will overwhelm him as he reaches the prime of life. This hazard, too, comes as no surprise to us. In 1935, Dr. Kenneth M. Lynch, then Professor of Pathology and now Chancellor of the University of South Carolina, described the case of lung cancer in a man who also had asbestosis. Because both of these diseases were then rare, Dr. Lynch suggested an etiological relationship. In the next 20 years, numerous similar cases of this association were recorded. Indeed, the Chief Inspector of factories in Great Britain, reviewing all the cases of asbestosis known to their Department, found in the mid-1950s that approximately 20% had associated lung cancer. Sticklers for statistical niceties insisted they were unconvinced, however, and wanted even better data.

Our experiences have supplied these requested morbid figures. I refer you again to the 632 men who were members of the Union in New York-New Jersey in 1942. You may wonder why we went so far back (especially since we have also been following 890 members of these Locals who joined in 1943 or after). The reason lies in an important characteristic of disease associated with industrial asbestos exposure. *Asbestos disease rarely occurs in less than 20 years from onset of exposure.* Thus, men who work with asbestos do not get asbestosis in five, ten or fifteen years after starting work—asbestosis will become significant and death may follow 25, 30 or more years following the start of their first job. A similar period of clinical latency is true of asbestos cancer, as well. When this occurs, it strikes 25, 30 or more years after the initial exposure. Incidentally, this is true of many other cancers, as well, both those related to industrial exposure and those not so related. For example, the youngster of sixteen or eighteen who starts smoking has no immediate fear of lung cancer, and correctly so. Unfortunately, he does not look ahead to his late forties or fifties, when the risk appears. Similarly, the bladder cancer following beta-napthalene exposure, the lung cancer of certain chromate workers, and even the skin cancers following arsenic ingestion: all have a long period of latency. For this reason, any evaluation of the carcinogenic potential of a substance, such as asbestos, must include a long period of observation in humans. I will talk more of this later.

To return. There were 632 members of these Locals on December 31, 1942. We have followed these men, as I have said, to the present. Since we knew the ages of each one of these men in 1942, it was possible for Dr. Hammond, who is Director of Statistical Research and Epidemiology for the American Cancer Society, to determine how many cancers we might expect among these 632 men in subsequent years. We then compared the actual number of deaths and causes of death among these men, with what should have occurred among them, had their experiences been the same as the general population in the United States, age, year and sex being taken into account.

The following Table outlines the data we obtained from January 1, 1943 to December 1, 1962.

OBSERVED AND EXPECTED NUMBER OF DEATHS DUE TO CANCER AMONG 632 ASBESTOS WORKERS EXPOSED TO ASBESTOS DUST 20 YEARS OR LONGER

	Years				Total, 1943–62
	1943–47	1948–52	1953–57	1958–62	
Total, all causes:					
Observed (asbestos workers)	28.0	54.0	85.0	88.0	255.0
Expected (U.S. white males)	39.7	50.8	56.6	54.4	203.5
Total cancer, all sites:					
Observed (asbestos workers)	13.0	17.0	25.0	39.0	95.0
Expected (U.S. white males)	5.7	8.1	13.0	9.7	36.5
Cancer of lung and pleura:					
Observed (asbestos workers)	6.0	8.0	13.0	18.0	45.0
Expected (U.S. white males)	.8	1.4	2.0	2.4	6.6
Cancer of stomach, colon, and rectum:					
Observed (asbestos workers)	4.0	4.0	7.0	14.0	29.0
Expected (U.S. white males)	2.0	2.5	2.6	2.3	9.4

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The Table demonstrates that of the 632 men, 203 deaths could have been expected, had their experience been the same as the general population. Instead, 255 men died. As we look for the reason for the extra 50 deaths, it becomes evident that cancers of several types are responsible for the excess deaths. Thus, while we might have expected six or seven deaths due to lung cancer among these men, there were 45. While we would have expected nine or ten cancers of the stomach or colon, there were 20.

Incidentally, since 1963 the figures have been, if anything, even worse. While we would have expected approximately 50 of the remainder of the men to have died in the past five years, there have been 113 deaths. And, while we would have expected 3 to have died of cancer of the lung or pleura, 28 have died of this disease. It is surely a tragedy to reflect that 1 in 5 of all insulation workers who now die in the New York-New Jersey metropolitan area die of lung cancer. More than half of the 368 deaths among these men in the past 25 years have been due to cancer of one or another type. If these figures are projected to the country as a whole, and if no improvement in the health hazards these men face is achieved, we may look forward to perhaps 8,000 deaths of lung cancer and to perhaps 15,000 deaths of cancer in general among men in this single asbestos trade alone, in the U.S.

I do not relish the role of Cassandra, and for the purpose of demonstrating the necessity for the development of an occupational health program for the insulation trade, the data already presented might suffice. Nevertheless, another dimension exists which may be useful in your considerations and which should be, at least briefly, mentioned. I refer to a hazard not even suspected until several years ago. While lung cancer, as I mentioned, was observed in association with asbestos more than 35 years ago, in the past several years, we have found that another tumor, mesothelioma of the pleura or mesothelioma of the peritoneum, has also begun to attack asbestos workers. This has attracted a great deal of attention, since until the recent past, this highly malignant tumor was considered to be extraordinarily rare—so rare as not to be separately coded in the International Classification of Causes of Death. Accurate data are hard to come by but in the past in general, mesothelioma was found in approximately 1 in 10,000 deaths. It was a very rare tumor.

Now, it is not at all rare among individuals exposed to asbestos. Thus, in the last several years over 270 cases have been collected in one laboratory in South Africa, primarily in the area about one group of asbestos mines. Over 370 cases have been collected by another group of investigators in Great Britain and, again, asbestos exposure has been traced for the majority of these.

We, too, have been struck by the early reports, especially by those of Dr. Christopher Wagner of South Africa, and noted that in our first 255 deaths, 4 had been due to mesothelioma. This number was, of course, too few to warrant extensive comment. However, since January 1, 1963, 13 of the next 113 deaths have been due to diffuse mesothelioma of the pleura or peritoneum! It would appear that this invariably fatal tumor has been added to the already heavy risks of the insulation worker and that one in ten deaths among them will be caused by it!

Mesothelioma is curious in another way—one that has caused us much concern. While the cases seen in my Laboratory have been among industrial workmen more or less heavily exposed to asbestos dust, in many other instances the degree of exposure to asbestos has been very light indeed and there has been no clear correlation between degree of exposure and the likelihood of occurrence of the tumor. Newhouse and Thompson in London have presented very disturbing data in this regard. They investigated seventy-six consecutive mesotheliomas at the London Hospital, most seen within recent years, to study the relationship of asbestos exposure. As expected, in 31 of the 76 cases, the individual had worked with asbestos. Of the 45 cases who did *not* work with asbestos, in 9 instances the only asbestos exposure occurred by virtue of their having lived in the household of an asbestos worker (who often came home with the dust on his clothes). That left 36. Eleven cases occurred in people who merely lived within ½ mile of an asbestos factory in one district in London!

Similar cases were reported by Wagner in South Africa, while in this country Lieben & Pistawka, reviewing 44 cases of mesothelioma in Pennsylvania, found that 20 had potential occupational exposure and 24 did not. Of the latter, 8 occurred as the result of neighborhood exposure by virtue of living near a factory using asbestos and in 3 cases there was potential household exposure. Thus, one death occurred in a minister living across the road from an asbestos plant, one

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was a child whose father was an asbestos worker and another death occurred in a woman whose sons worked with the material. Borow and his colleagues have recently reported 17 cases of mesothelioma in New Jersey. Again, 15 were in asbestos workers, but two were in individuals who merely lived in a town which had a large asbestos factory.

The very real question has thus been raised—is asbestos-induced cancer limited to those men who regularly are exposed to significant amounts of the dust, or is it a much wider hazard than this? A moment's reflection may highlight the potential problem. We have little accurate data concerning the number of men employed in the United States who are regularly and directly exposed to asbestos, as in asbestos textile plants, asbestos product factories, insulation work, etc. Perhaps 100,000 or more men are regularly so employed. The hazards I have outlined would be serious enough if this were the only group involved. But are those indirectly occupationally exposed at similar risk? If so, the problem is much wider. For example, insulation workers work side by side with more than 3,500,000 other construction workers, often in the same room, inhaling the same dusts—steamfitters, electricians, carpenters, plumbers, masons, tile setters and others. Incidentally, to their indirect exposure must be added occasional direct exposure of their own in some instances, as a carpenter sawing an asbestos-cement board, a plumber using asbestos rovings, or the electrician stripping asbestos-covered wire. Much of the asbestos now used is used in the construction industry and much of the increase in world production (500,000 tons per year in 1930 to over 4,000,000 tons per year at present) has been utilized here.

I believe enough has been said to indicate that an important occupational health problem exists in this trade, one that requires urgent and energetic corrective measures. I would urge you to consider the Bill before you in relation to the data I have presented. My own reading of the Bill suggests that it will go a long way in improving the unfortunate conditions that now exist. Again, from my own experience, a number of observations may be pertinent in evaluating specific approaches contained in the Bill.

1. I am convinced that the problems I have detailed can be solved and health hazards eliminated. Suggestive evidence is available in Great Britain, Germany and in this country indicating that both asbestosis and bronchogenic carcinoma can be significantly reduced in incidence as levels of asbestos exposure are drastically reduced. The asbestos industry in general and the insulation industry in particular are much too important and much too valuable to be limited or injured by default. Appropriate safety measures are thus in the interests of both the industry and its employees.

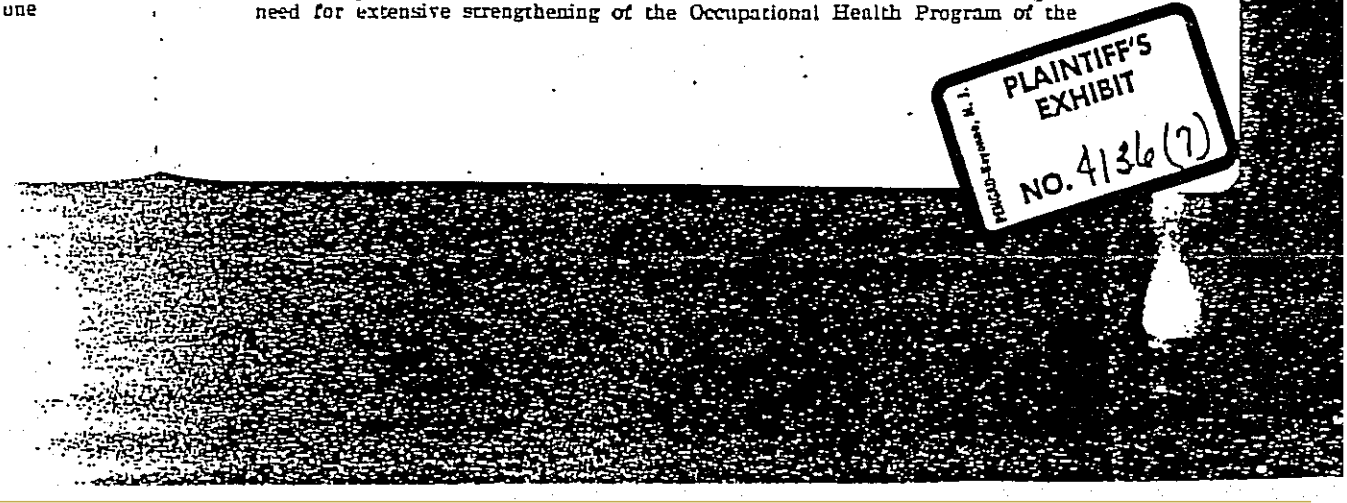
2. Workmen in the trade expect and await the measures necessary to eliminate or diminish the hazards to which they are exposed. I recently inquired of them what problems they had noted in their practical experience. Over 13,000 took the trouble to write me with suggestions about cleaning up their trade, ranging from the availability of improved masks through less dusty materials, improved working practices, appropriate exhausts, appropriate health examinations and the vacuuming of clothes before going home.

3. It is idle and largely inaccurate to "blame the industry" for the present situation. It is sometimes not appreciated that "industry" is not an all-powerful monolithic single entity—certainly it is not in the insulation trade. In this trade, most employers are small business men, with limited resources, employing few men. When I looked into this matter at the end of 1965, there were over 900 employers in the industry, employing an average of 17.6 men per shop.

Such employers have neither the expertise, nor funds, nor knowledge to have detected these health hazards. They are just as much upset by them as are their men. Nor can they mount the necessary engineering and industrial hygiene programs to develop adequate safeguards to remove these hazards. They will be anxious, I am sure, to undertake appropriate occupational health and industrial hygiene programs once these are suggested to them. This, I assume, is in line with the purposes of the Bill.

4. In the insulation trade, it is my impression that, while all would welcome the necessary measures, unless the public health authorities and those responsible for the occupational health measures take action, nothing will be done. In large part, this is because no one knows where the responsibility actually lies. Does it belong with the materials manufacturers? The individual employer? The regional employers' associations? The national employers' association? The national materials manufacturers' association? The local unions? The international union?

5. The problems we have discussed are excellent illustrations of the urgent need for extensive strengthening of the Occupational Health Program of the



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Public Health Service. Their task has been tremendously extended and complicated in the last 20 years by the widespread introduction of numerous new materials, the biological actions of which are usually untested. Are there other asbestoses lying in wait for us? Only the Public Health Service includes the possibility of long-run surveillance necessary for detection of those effects with a long latent period, as occupational cancer. Their continuing responsibility includes the coordination of observations made by scientists in various fields at various times. Moreover, they often have the opportunity of studying large groups of men, often occupational lists. Few employers, except the very largest, have this opportunity.

Moreover, workmen often go from job to job within the same industry, especially in the construction trades. No one employer can expect to follow his employees long enough for long-term effects to be defined. Indeed, since such effects may vary with the same material from industry to industry, only a body which can observe all industries may be able to detect such effects.

What I am saying is that industry is simply unable to police itself in the detection and definition of such hazards as have occurred. The industry needs help.

6. I would suggest that it is very much in the interest of industry in general, and the insulation industry in particular, to have, as the proposed Bill suggests, adequate authority given to the Department of Labor to set those standards necessary to reduce or eliminate occupational health hazards. I do not refer to those callous statistics which indicate that it is cheaper in the long run to have adequate safety and health precautions than to pay workmens compensation costs. While this may be true, there is a much more important aspect to the question.

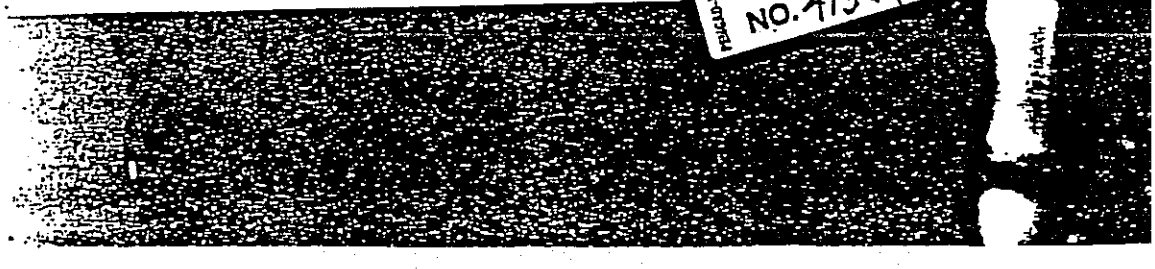
In many instances, where there is intra-industry and inter-industry competition, it is often the most conscientious employer who is at a competitive disadvantage. This is certainly true in those industries in which there is a risk of pneumoconioses or dust diseases of the lungs, as silicosis, coal workers, pneumoconisis, talcosis and asbestosis. Since there is, as we have seen, a long latent period—usually over 20 years—between dust exposure and disease resulting from such exposure, precautions taken today will bear fruit, in the form of the employees' good health, two decades or more hence. But at that time, it is highly likely that the employee will be working elsewhere! The employer in investing in current occupational health precautions, sees no immediate benefit, not even in reduction of workmen's compensation costs. If he must pay the latter to current employees who are ill, he is paying for the neglect of another employer twenty or thirty years before.

This analysis is relevant to the insulation trade today. I have spoken to many insulation contractors. They have been very concerned with the difficulties that have become evident and earnestly wish to remedy matters. Yet they have told me that if substantial investments or significant changes in working practices and conditions were required as part of the program to make this trade safe for the men working in it, such investments should be industry-wide and should not penalize those who undertake them in favor of those who do not.

Standards based upon information collected and evaluated by experts in the Public Health Service, set on practical and realistic levels by the Secretary of Labor with adequate enforcement powers, and required by all employers in the industry seem essential to correct the serious situation I have outlined. The industry itself has neither the academic and scientific nor the administrative resources to prepare the appropriate corrective program and, the economic facts of life are such as to mitigate against the broad application of such a program by voluntary persuasion alone.

Moreover, these influences are even more relevant when considering the social and community responsibilities which may exist. If the use of asbestos insulation materials should be shown to include some health hazard to other construction workmen as the result of concomitant indirect occupational exposure, we would need some mechanism as that outlined in this Bill to insure appropriate corrective measures, since many employers might hesitate to undertake expensive precautionary measures to prevent uncertain disease that might occur many years later among men they did not know, did not employ and for whom they had no responsibility—especially if in making such an investment they assumed an intolerable competitive disadvantage.

In concluding, may I add a few words of personal comment and opinion. As I read this Bill, it seemed to divide responsibility fairly and effectively. What we now know would be used to set enforceable standards immediately. The institution of beryllium safety standards has resulted in a significant reduction



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in beryllium disease and similar advantages will be obtained with other noxious agents, of which we already know a good deal; enough to prepare practical, realistic safety programs.

I noticed that Secretary Wirtz on February 15 testified that over 1,000 workers are expected to die from radiation-induced lung cancer in uranium mines. I am sure we all regret these deaths from a hazard which has been recognized since 1879. And we have enough knowledge to point the urgency of a protective program for our insulation workers in this country, who should no longer die of asbestosis, lung cancer, pleural and peritoneal mesothelioma. We should help industry help itself in the development, installation and administration of an industry-wide program which will penalize no employer but will help the many thousands of workmen who look to us to accept our responsibility to protect them against serious occupational hazards.

On the other hand, the Bill looks forward to an important expansion of the research responsibilities and capabilities of the Occupational Health Program of the Public Health Service. This is urgently needed. At this time the Program is composed of highly skilled, energetic and dedicated scientists. But their responsibilities, already heavy and numerous, are increasing almost geometrically. The Surgeon General, Dr. Stewart, stated in his testimony on February 20 that ". . . workers are coming in contact with literally hundreds of new chemicals and formulations in industrial uses every day." He noted that these ". . . chemicals have increased so fast in number that we have recommendations for only 400 out of 6,000 in commercial use." Industry has increased in complexity and potential hazard. The tasks of the Occupational Health Program must somehow be accomplished and I would strongly urge that the strengthening of the Occupational Health Program as envisaged by this Bill be supported.

In conclusion, may I thank you, Mr. Chairman, and the Members of the Committee for your invitation and for the opportunity of reviewing those of our experiences relevant to the Bill you are considering.

Dr. SELIKOFF. Thank you, Mr. Chairman and members of the committee.

For the record, my name is Irving J. Selikoff. I am professor of community medicine at the Mount Sinai School of Medicine of the City University of New York and director of its Environmental Sciences Laboratory. I am editor in chief of "Environmental Research," a recipient of the Lasker Award in Medicine of the American Public Health Association, a diplomat of the American Board of Preventive Medicine. I am president-elect of the New York Academy of Sciences, a member of its scientific council, and have served as chairman of its division of environmental sciences.

I detail these responsibilities both as identification and as an index of my professional and scientific interest in the problems with which this bill is concerned, but I must confess at the outset that while my studies and research have been professional and scientific, the applications which may be derived from them are emphasized by my responsibilities as a citizen and a physician.

The data I shall present are rigorously scientific, but I hope you will interpret them not only as cases in a series of tables but as persons whose health and lives are our responsibility.

I propose to describe to you my research experiences with one group of workmen in this country, so that you might use them as an example or as a yardstick against which to evaluate this proposed bill, to test whether it is necessary or unnecessary, whether it goes too far or not far enough, whether it is sorely needed or will prove superfluous. Because if this bill is not the answer, an answer must surely be found for the difficulties I will review.

For the past 6 years, I have been investigating occupational health hazards among insulation workers in our construction industry. These men apply the thermal insulation to pipes, ducts, boilers, and other

PLAINTIFF'S EXHIBIT NO. 413619

Occupational Safety and Health: Hearings Before the Select Subcommittee on Labor of the Committee on Educatio… Published by AsbestosClaims.Law
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structures in buildings, factories, shipyards, and other facilities. They are self-reliant, skilled craftsmen.

The first union of insulation workers in the United States was formed in New York City in 1884 under a charter issued by the Knights of Labor, predecessor of the American Federation of Labor, as "The Salamander Association of Boiler and Pipe Felters." Partly from these beginnings, the present union of insulation workers in this country was chartered in 1910 by the AFL as the International Association of Heat and Frost Insulators and Asbestos Workers. They are an important part of the construction industry. The trade is an important one and it is not too much to say that modern construction and modern industry would halt without their work.

The union has some 18,000 men on its rolls and there are probably almost an equal number of insulation workers who are not members of this union, often because of conditions of their work, as being employed in maintenance work, doing insulation work as part of other occupations, being members of other unions, or by virtue of doing special insulation applications as, for example, spraying.

During the course of their work, these men use many materials, some of them mineral or of other inorganic nature. While we have had little knowledge concerning possible adverse effects of most of the materials with which they work—in part, because of their rather recent introduction and inadequate opportunity to observe the presence or absence of such effects—one of the materials with which they work has been under suspicion as a health hazard for some time.

I refer to asbestos. This fiber, with unique characteristics and of great value in our industry, is found in a number of the products which these men use in their work and have used for more than 70 years.

In 1924, which is a little over 40 years ago, Dr. Cooke in England described a case of a woman dying of severe lung scarring who had spent 20 years in a textile factory, weaving asbestos, and in the next decade many similar cases were reported, so that by the mid-1930's the hazard of asbestos as a pneumoconiotic dust was pretty universally accepted.

Textile factories in this country, most of them in the southern part of our country, were also studied and our Public Health Service fully documented the very significant risks involved in asbestos textile factories and a classic report by Dreesen and his colleagues which was published by the GPO in 1938. Precautionary measures were urged in this report and elimination of hazardous exposures were strongly recommended.

As I sit here now, I am unhappy to say that unfortunately implementation of these recommendations has been haphazard and inadequate and that conditions and dangers so well recognized and so well described 40 years ago are still with us. It is an unhappy reflection on all of us—government, public health authorities, and my own medical profession—that at this time in the United States in the 1960's 7 percent of all deaths among insulation workers in this country are due to a completely preventable cause, pulmonary asbestosis.

In New York City among the insulation workers I have studied in the past several years, I have seen 27 men die of asbestosis of a total of 367 deaths among this group of men.

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Now, since there is no other cause for pulmonary asbestosis except the inhalation of asbestos fibers, these 27 deaths among the men under my care have been completely unwarranted and completely unnecessary. Moreover, of the men who have not been so badly affected as to die of the disease, many have been and are disabled to a greater or lesser effect or extent.

Thus, more than half of the insulation workers examined by me—and I have now examined over 1,300 insulation workers—more than half of those examined by me with more than 20 years from onset of their work have abnormal X-rays of asbestosis and one-third have shortness of breath of some degree.

Therefore, it is evident that in some way we have failed these men. They have every right to look to their Government and to their public health authorities and to the physicians and scientists who guide them for protection at their work and were not given this protection.

If the problem were limited to this particular difficulty—that is, scarred lungs as a result of inhalation of mineral fibers—it would be bad enough and it would be sufficient spur to remedial action. However, these workers face an even greater, and even more worrisome hazard. There is hardly an asbestos insulation worker in the country today who is not concerned with the possibility that cancer, induced by the asbestos to which he is exposed, will overwhelm him as he reaches the prime of life.

Unhappily, once more, this hazard, too, comes as no surprise to us. In 1935, Dr. Kenneth M. Lynch, who was then professor of pathology and is now chancellor of the University of South Carolina described a case of lung cancer in a man who also had asbestosis. It is hard to realize now in 1968 that lung cancer at that time was an uncommon disease, but it was.

Since asbestosis at that time was also uncommon, he felt that the combination of these two diseases was sufficiently unusual to warrant reporting it and he did. He also suggested casual relationship between these two.

In the next 20 years, from 1935 to 1955, numerous similar cases of this disease were recorded and in Great Britain, where indeed the asbestos manufacturing industry started, the Chief Inspector of Factories for Great Britain reviewed in 1946, in 1949, and in 1954, all cases of individuals dying with asbestosis in Great Britain.

To his astonishment, he found that 20 percent of all deaths in Great Britain of individuals dying with asbestosis also had lung cancer. Since the general population in Great Britain at that time had only 1 percent of deaths due to lung cancer, he remarked on this and raised a question of lung cancer being a hazard associated with the industrial use of asbestos.

There were some problems with the statistics involved in this work and in many parts of the scientific world there were a number of sticklers for statistical niceties who insisted they were unconvinced and wanted even better data.

Well, our experiences have supplied these requested morbid figures: In 1942, in New York, we had 632 men who were members of the Insulation Workers Union, on December 31, 1942, and we have followed every single one of the 632 men since that time. Now, you may wonder why I go back all the way to 1942, and the reason for this is



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very interesting and that is that asbestos disease, disease associated with the inhalation of asbestos, does not occur soon after you breathe it in; it does not occur until 25 or 30 years later. You breathe it in now and get your lung cancer 25 years later.

The same thing is true with many other things causing cancer: for example, cigarettes. Kids of 16 who start smoking cigarettes do not worry about lung cancer and are right because they don't get it at 20, 25, 30, or 35, but have to wait until they are 50 or 55; and the same thing is true with aniline-dye workers, who absorb betanaphthylamine, for example, and don't get bladder cancers until 25 years later.

Therefore, we began to watch asbestos-insulation workers in 1942 to be able to have a long enough period of observation to see what would happen. Also, knowing their ages in 1942, we were able to determine how many should have died of any disease by the end of 1962, knowing the usual rates for men in the United States during those years.

The statistical data was accomplished and undertaken by my colleague, Dr. E. Cuyler Hammond, who is also director of statistical research for the American Cancer Society and one of the country's outstanding biostatisticians and epidemiologists.

Let me tell you now a little bit of what we have found among insulation construction workers in New York City, men that you see driving next to you on the road going to work, people just like us. We found that whereas there should have been, if their experience were the same as all other U.S. males—whereas there should have been 200 or so deaths among them, there were 255.

Now, why were there 50 extra deaths in this small group of men? When we looked at the causes of death, the answers became obvious. As expected, some died of asbestosis; 12 out of the first 255 died of asbestosis. This is pretty bad but we knew this. Unhappily, whereas there should have been six or seven deaths due to lung cancer, there were 45. In other words, there was something peculiar about these 632 men, that instead of six dying of lung cancer within a 20-year period, 45 did—seven or eight times the expected number.

Incidentally, while these figures go to the end of 1962, our observations among these men have continued to the present. I might tell you that the results up to January 31, 1968, when I prepared the material for this hearing, are even worse. We would have expected 50 deaths among these men from January 1, 1963 to January 31, 1968. Instead of 50 deaths, we have had 113. We should have had, had their experience been the same as all other U.S. males, three deaths due to lung cancer and we have had 28, so that the same tragedy dogs these men.

Incidentally, other cancers have also been highly increased. For example, we would have expected from 1942 to 1968 in this group of men in New York 11 deaths due to cancer of the stomach and colon. Well, as you know, people who work in dusty atmospheres "eat" the dust as well as breathe it. We have had 38 cancers instead of the expected 10 of cancer of the stomach and colon.

We have also had unhappy experiences with something even more unusual. Now, I hope you will bear with me because I will have to use some words which are perhaps new to you. In doing so, I might add that I do not relish the role of Cassandra but it must be mentioned. I refer to a hazard not even suspected until several years ago. While

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lung cancer was observed in association with asbestos by Dr. Lynch more than 35 years ago, in the past several years we have found another tumor, mesothelioma of the pleura, or mesothelioma of the peritoneum: this is a tumor which affects the lining of the chest or abdomen, the mesothelial surface, and therefore labeled "mesothelioma."

We have found these tumors also began to attack asbestos workers. This is particularly bad because this tumor is invariably fatal. Because of our studies and regular X-rays among asbestos workers, we have been able to save a number of patients with lung cancers. We have detected them early, have had the men operated on and we have a few we have been able to save. Mesothelioma of the pleura or peritoneum is diffuse: it lines the entire cavity and cannot be removed surgically.

In the past, incidentally, this tumor has been so rare, as not even to be separately classified in the international list of causes of death. I don't think in this country in the past we have had more than one in 10,000 deaths due to mesothelioma. On the other hand, at the present time among asbestos workers it is not at all rare. Indeed it is common.

In the last 113 deaths in New York in the single local union in New York City, we have had 13 deaths due to mesothelioma of the pleura. In other words, one out of 10 instead of one out of 10,000.

Mesothelioma is curious in another way and one that has given us a great deal of concern and may you. While the cases that I have talked to you about—that is, the 13 our of 113 deaths—have been among industrial workmen who are more or less heavily exposed to asbestos even though they largely work in the open air, as in a building under construction, still the amount of asbestos they breathe in is much more than people occasionally exposed very lightly to some of the material.

However, other investigators have given evidence that the degree of exposure to asbestos bears no clear correlation with a likelihood of occurrence of the tumor. Molly Newhouse and Hilda Thompson in London presented very disturbing data in this regard. At the London Hospital in recent years there have been, like everywhere else, very large numbers of mesotheliomas, 76 cases mostly in the last few years.

Incidentally, in South Africa, in the region around the asbestos mines near Kimberley they have collected now 250 cases. Dr. Christopher Wagner, one of the pioneers in this field, has now collected in Great Britain in several urban centers 350 cases.

Well, in this one hospital in London called the London Hospital, they had 76 cases of mesothelioma. Molly Newhouse went to investigate the people who died. She visited the families, the surviving wives, and so forth, and, as expected, of the 76, 31 had worked with asbestos.

Well, we now know that if you work with asbestos, you stand a good chance of dying of mesothelioma. Nevertheless, there were 45 cases who did not work with asbestos. And here is the rub: Of the 45 who did not work with asbestos, nine simply lived in the household with an asbestos worker. In other words, he came home with some dust on his clothes and the wife washed the clothes—household exposures. That still left 36; and of the 36, 11 simply lived within a half mile of one of the asbestos plants in London.

Struck by these observations, other scientists have taken a look at the subject as well in this country. Jan Lieben, who is chief of the occupational health program of the State of Pennsylvania, last year published a review that he had just done of 44 mesotheliomas they were

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aware of in Pennsylvania. Again, 20, as expected, had potential occupational exposure to asbestos at their work. But of those who did not work with asbestos, eight simply lived in the vicinity of an asbestos plant or a factory using asbestos, and three were simply household contacts.

For example, there was one little girl who died of mesothelioma whose father worked with asbestos. There was a woman who had two sons working with asbestos who died of mesothelioma, and one was a minister who lived down the road from an asbestos plant.

Incidentally, I might comment, too, on Borow's study reported a few months ago. In one town in New Jersey, Somerville, where 17 cases were seen by him (one chest surgeon, in one town, saw 17 cases of mesothelioma) 15 worked in an asbestos plant not far away, and two simply lived in the same town with that plant.

This raises a very real question: Is asbestos-induced cancer limited to those men who are regularly exposed to significant amounts of the material, or is it a much wider hazard?

A moment's reflection will highlight the potential problem. For example, in this country we really don't have accurate data on the number of men heavily exposed; in other words, asbestos workers in textile or other factories or insulation workers. My best guess is, it is somewhere in the order of magnitude around 100,000 or 125,000 to 150,000. That would be bad enough, but if the findings of Newhouse and Thompson and Lieben and Wagner and Borow and others are real, then the problem of indirect occupational exposure has to be considered.

For example, the insulation workers work side by side with many other men in construction work. They put their materials into buildings with many other trades. They could be working in a boilerroom and down the way is an electrician and at the other end of the room is a carpenter, putting a door jamb in. A real question arises as to whether it is simply the 20 or 30,000 insulation workers who are at risk or 3½ million, 5 percent of our total work force in this country, who are subject to risk.

I think I have said enough now to indicate that an important occupational health problem exists in this trade, one that requires urgent and energetic corrective action. I urge you to consider the bill before you in relation to this data.

My own reading of the bill suggests that it will go a long way in improving the unfortunate conditions which now exist, and from my own experience, I would like to make a number of observations which may be pertinent in evaluating specific approaches contained in the bill under your consideration.

First, I am convinced that the hazard and problems I have detailed can be solved and the hazard can be eliminated. We have enough engineering talent, industrial-hygiene talent in this country to solve the problem. Beryllium is a perfect example. Here was a highly toxic dust difficult to manage and yet when attention was paid to it, it was practically eliminated as a public health hazard in this country.

Secondly, I might add that the workmen in this trade expect and await the necessary measures to eliminate or at least severely diminish the hazards to which they are exposed. I recently inquired of the insulation workers in this country what problems they had noted in their day-to-day practical experience, and over 13,000 took the trouble to write me, giving me details of what they considered had to be done.

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That indicates a keen interest, and they should have it, because they see what happens to their colleagues as they are working.

At the same time, I think it is idle and largely inaccurate to blame the industry alone for the present situation. This benign approach of mind is not adopted, I may add, by all of my colleagues, but I think they are wrong. It is sometimes not appreciated that industry is not an all-powerful, monolithic, single industry, and it is not, in the insulation trade.

In December 1965, I looked into the matter of how many employers there were of the 18,000 men in the Insulation Workers Union and I found there were over 900 employers and the average number of men employed by them was only 17.6 per shop. Such employers have neither the expertise, the funds, the knowledge to have detected these health hazards and they are just as much upset by them as are their men.

Moreover, in their situation, they cannot mount the necessary engineering and industrial research programs to develop adequate safeguards to remove these hazards. They are anxious, I am sure, to undertake appropriate occupational health and industrial-hygiene programs once these are suggested to them. This, I assume, is in line with the purposes of this bill.

Moreover, I am reminded, as I talk to many employers in the insulation trade, of what sometimes happens to any of us as we see a dangerous situation approaching—a snake, a car, and so on. Sometimes we stand transfixed, not knowing where to run, not knowing what to do, and this is the situation in which these people find themselves. They don't know who is to take the first step. They don't know whose responsibility this is. Is it the National Contractors Association? Is it the individual contractors? Is it the international union? Is it the local union? Is it the Materials Manufacturers Association? Who is responsible? They really don't know.

Moreover, I don't think that they have another ability to look into this matter. For example, workmen often go from job to job within the same industry. In the insulation trade, that is, surely, and also in many other trades in the construction industry. No one employer can be expected to follow his employees long enough for long-term effects to be defined. Since it may vary from industry to industry, only bodies such as the Public Health Service can be expected to detect such effects.

I note, too, in this bill an important role in research given to the Public Health Service to maintain the long observation necessary to detect occupational hazards, especially occupational cancer.

What I am saying is that industry is simply unable to police itself in the detection and definition of such hazards as we have seen have occurred. I am here to say that the industry needs help and I would hope that the mechanisms designed in this bill would provide help to the industry.

I suggest, too, that it is very much in the interest of industry in general and the insulation industry in particular to have, as the proposed bill suggests, adequate authority given to the Department of Labor to set standards necessary to reduce or eliminate occupational health hazards.

And I don't refer to such statistics as, well, once you spend money to set in safety procedures, you will save money in the long run be-

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cause your workmen's compensation costs will be less. While it may be true. I don't think it is very important.

On the other hand, there are many instances where intraindustry and interindustry competition would place the most conscientious employer at a competitive disadvantage. This is certainly true in those industries in which there is a risk of pneumoconiosis or dust in the lungs, such as silicosis or abestosis.

Since there is, as we have seen, a long latent period, usually over 20 years between dust exposure and disease resulting from such exposure, the precautions taken today will bear fruit in the form of good health 20 years or more later. At that time, it is very likely that the employee who was protected by the employer will be working for somebody else. Therefore, the employer, in investing in current occupational health precautions, sees no immediate benefit, not even in the reduction of workmen's compensation costs, because if he must pay compensation costs to current employees who are ill, he is paying for the neglect of another employer 20 years before him.

This analysis is relevant to the insulation trade to date. I have spoken to many insulation contractors, some in this room. They have been very concerned with the difficulties that have become evident and earnestly wish to remedy matters, yet have told me if substantial investments or significant changes in working practices and conditions were required as part of the program to make this trade safe for the men working in it, such investments should be industrywide and should not penalize those who undertake them in favor of those who do not.

Moreover, these influences are even more relevant when considering the social and community responsibilities which may exist. If the use of asbestos insulation material should be shown to include some health hazards to other construction workmen as a result of concomitant indirect exposure, we would need, absolutely need, some measure as the ones outlined in this bill to insure appropriate corrective measures, since many employers might hesitate to undertake expensive precautionary measures to prevent uncertain disease which might occur, many years later, among men they did not know, did not employ, and, for whom they had no responsibility, especially if in making such an investment they assumed an intolerable competitive disadvantage.

I think I have said enough now. I might emphasize in concluding, that Dr. Stewart in his testimony before your committee on February 20 was correct in saying that workers coming into contact with literally hundreds of new chemicals and formulations of industrial uses every day have inadequate protection. He noted that chemicals have increased so fast in number that we have recommendations for only 400 out of 6,000 in commercial use.

Industry has increased in complexity and potential hazard. The tasks of the occupational health program must somehow be accomplished and I would strongly urge that the strengthening of the occupational health program as envisaged by this bill be supported.

In conclusion, may I thank you, Mr. O'Hara and members of the committee, for your invitation and for the opportunity of reviewing those of our experiences relevant to the bill you are considering.

Mr. O'HARA. Thank you very much, Dr. Selikoff. I think your testimony has been extremely useful in reminding us again of the nature and complexity of the problems we are dealing with.

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Mr. Burton, any questions?

Mr. BURTON. No questions. I want to say I am impressed with your testimony and I don't think I will volunteer to be an asbestos worker.

Mr. O'HARA. Yes.

Dr. SELIKOFF. Incidentally, I think I might comment there is another bill before the House, H.R. 12913, also attacking the asbestos problem. Many people are now becoming concerned with it.

Mr. O'HARA. H.R. 12913 is a bill which was sponsored by our colleague, the gentleman from New Jersey (Mr. Patten), who has also joined in the sponsorship of a bill identical to H.R. 14816. H.R. 12913 has been referred to the Committee on Interstate and Foreign Commerce, but I shall ask that it be printed in the record at this point for the information of the subcommittee.

(Text of H.R. 12913 follows:)

[H.R. 12913, 90th Cong., first sess.]

A BILL To promote the safety of workers engaged in making asbestos products for shipment in commerce, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Asbestos Workers' Health Protection Act".

DEFINITIONS

SEC. 2. As used in this Act—

(1) The term "Secretary" means the Secretary of Health, Education, and Welfare.

(2) The term "commerce" means commerce (A) between any State and any point outside thereof or (B) between points in the same State, but through any point outside thereof.

(3) The term "State" includes the District of Columbia and the Commonwealth of Puerto Rico.

(4) The term "asbestos product" means asbestos or any article made in whole or in part of asbestos.

(5) The term "person" means an individual, partnership, corporation, association, or other form of business enterprise.

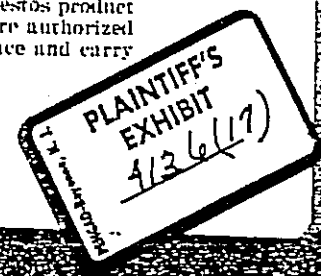
RULES AND REGULATIONS

SEC. 3. (a) Not later than one year after the date of enactment of this Act, the Secretary shall prescribe and publish in the Federal Register rules and regulations for the protection of the health of persons handling asbestos or asbestos products or engaged in the manufacturing of such products, including (1) rules and regulations for the labeling of asbestos products so as to fully inform handlers and ultimate users of such products of the health hazards of such products and any measures which should be taken with respect thereto and (2) standards establishing limits on the number of particles of asbestos which may be in suspension in the air breathed by humans.

(b) In addition to the rules and regulations prescribed pursuant to subsection (a) of this section, the Secretary is authorized to prescribe such rules and regulations, including rules and regulations for the making and maintenance of records, as may be necessary for the administration and enforcement of this Act.

INSPECTION

SEC. 4. (a) For purposes of enforcing this Act, officers and employees of the Department of Health, Education, and Welfare designated by the Secretary, upon presenting appropriate credentials and a written notice to the person owning, operating, or in charge of any place where any asbestos or asbestos product is held for introduction into commerce or after such introduction are authorized (1) to enter such place at reasonable times, and to inspect such place and carry



out such tests as may be necessary to determine conformity with standards prescribed pursuant to section 3 of this Act. Such inspection and testing shall in all cases be carried out at reasonable times, within reasonable limits, and in a reasonable manner.

(b) Upon completion of any inspection carried out pursuant to subsection (a), the officer or employee making it, before leaving the premises shall give to the person to whom notice was presented pursuant to such subsection a report in writing setting forth any conditions or practices which are in violation of standards, rules, or regulations prescribed pursuant to this Act. A copy of such report shall be sent promptly to the Secretary.

PROHIBITED ACTS

SEC. 5. No person engaged in the business of refining or selling asbestos, or of manufacturing or selling asbestos products, for introduction into commerce shall violate any rule or regulation prescribed by the Secretary pursuant to section 3 of this Act.

ENFORCEMENT

SEC. 6. (a) If the Secretary, after reasonable notice and opportunity for a hearing, determines that any person is violating section 5 of this Act, he shall issue an order requiring such person to cease and desist from continuing such violation within such time as may be specified in such order, but in no event less than thirty days from receipt of notice of such order by such person.

(b) Any person required by an order of the Secretary to cease and desist from violation of any such standards, rules, or regulations may obtain judicial review of such order by filing a petition for review, within sixty days after service of such order, in the United States court of appeals either for the circuit in which such person resides or has his principal place of business or for any circuit in which the violation is found to have occurred, or in the United States Court of Appeals for the District of Columbia Circuit. A copy of the petition shall forthwith be transmitted by the clerk of the court to the Secretary or to any officer designated by him for that purpose and to the Attorney General, and thereupon the Secretary shall certify and file in the court through the Attorney General the record of the proceedings upon which the order is based, as provided in section 2112 of title 28, United States Code.

(c) Upon the filing of such petition, such court shall have jurisdiction of the proceeding (which jurisdiction shall upon the filing of the record be exclusive) and shall have power to affirm the order of the Secretary, or to set it aside in whole or in part, temporarily or permanently, and to enforce such order to the extent that it is affirmed, and to issue such orders pendente lite as in its judgment are necessary to prevent injury to the public. The commencement of proceedings under this paragraph shall not, unless specifically ordered by the court, operate as a stay of the Secretary's order.

(d) No objection to the order of the Secretary shall be considered by the court unless such objection was urged before the Secretary or unless there were reasonable grounds for failure so to do. The findings of the Secretary as to the facts, if supported by substantial evidence on the record considered as a whole, shall be conclusive, but the court, for good cause shown, may remand the case to the Secretary for the taking of additional evidence in such manner and upon such terms and conditions as the court may deem proper, in which event the Secretary may make new or modified findings and shall file such findings (which, if supported by substantial evidence on the record considered as a whole, shall be conclusive) and his recommendation, if any, for the modification of setting aside of his original order, with the return of such additional evidence.

(e) The judgment of the court affirming or setting aside, in whole or in part, any order under this subsection shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28, United States Code.

(f)(1) Any person who violates a cease and desist order of the Secretary after it has become final and while such order is in effect, shall forfeit and pay to the United States a civil penalty of $5,000 for each violation, which shall accrue to the United States and may be recovered in a civil suit in the name of the United States brought in the district where such person has his principal office or in any district in which he does business. Each separate violation of such an

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order or failure to file such a report shall be a separate offense, except that in the case of a violation through continuing failure to obey a final order of the Secretary each day of continuance of such failure shall be deemed a separate offense. The Secretary may, upon application therefor, remit or mitigate any forfeiture provided for in this paragraph, and he shall have authority to determine the facts upon all such applications.

(2) It shall be the duty of the various United States attorneys, under the direction of the Attorney General of the United States, to prosecute for the recovery of such forfeitures.

Mr. O'HARA. I am going to have a few questions but first I am going to give my colleagues on the committee a chance. Mr. Esch.

Mr. ESCH. Thank you very much. I, too, want to thank you for testifying, Doctor, before the committee and giving us really a classic example of what intensive research over a period of time can show us in terms of industrial hazards.

I wonder about one aspect that was mentioned facetiously but it could certainly be a serious question, and that is, do you have anything in your study to show the impact of those who did not smoke historically among the asbestos workers?

Dr. SELIKOFF. Yes, sir, Mr. Esch, we do. Do I have a few minutes to tell you about it?

Mr. O'HARA. Yes.

Dr. SELIKOFF. We don't know how asbestos causes cancer. One of the theories has been that the cancer producing substances such as those contained in cigarette smoke might become adsorbed onto the fiber and since the fiber, because it is thin and sharp, stays in the lung tissue, this would serve to fix the cancer producing substance in one place in sufficiently high concentration and for a sufficient period of time to produce the cancer.

This has been one of the theories and it is now being studied.

Therefore, we have looked into the question of a possible relationship with cigarette smoking.

On January 1, 1963, we had under observation 370 asbestos insulation workers in New York who had been in the trade for more than 20 years, in other words, these were the men now at risk. We also had under observation another 900 men who had been in the trade for less than 20 years and we couldn't have expected anything to happen to them.

Of the 390 men, 87 had no history of cigarette smoking and 283 had a history of cigarette smoking.

Up to last month, of the 87 men oldtime experienced insulation workers, in these 87 men we have yet to see a lung cancer. Of the 283 who had smoked cigarettes and worked with asbestos we would have expected 2 or 3 lung cancers as cigarette smokers: in other words, given the rate for cigarette smokers for 283 adult cigarette smokers of their ages, we would have expected 2 or 3 lung cancers in the 5 years. We have seen 28.

So it is not simply the smoking, because we should have only seen 2 or 3, it is nor simply the asbestos because we had asbestos workers and they didn't die of lung cancer if they didn't smoke cigarettes. It is something peculiar about this *combination*. This has given us even greater concern.

I think you may have heard rumors that many people in this country now have some few fibers of asbestos in their lungs and most of us now do. In New York City, at the present time, in a series of 3,000 au-



topsies being studied in my laboratory, we have found a few asbestos bodies, asbestos fibers in at least 50 per cent of people now dying in New York City. The same has been found in Pittsburgh, Miami and other cities.

These are very few fibers. We have no idea whatever if they have any significance but the question is raised whether they might have significance in smokers and since a large proportion of our male population smokes, this may be a particular hazard.

Mr. Esch. I thank you very much for your testimony and I think it is significant and it is rather shocking. Perhaps it highlights, too, the problem we have in trying to draft legislation which will really meet the problem. If there were not such a serious matter here, we might facetiously suggest perhaps we should get an injunction against all workers to stop smoking if they are working in the asbestos industry and this is the intent of the bill and in effect if there is apparent danger present then you get an injunction to stop a process.

This is a difficulty perhaps that we have right now. You mentioned that Great Britain has been effective in dealing with the problems and hazards that you have indicated. What have they done? Could we get any direction from Great Britain?

Dr. Selikoff. Yes, we can. Indeed, they had a meeting of the employers, the industry, and the labor unions and the Government authorities as far back as 1931 and they put down very stringent regulations for the highly exposed areas. We now know that other areas also should have been protected. This is all in retrospect.

Unfortunately, they realize they made a mistake and did not go far enough. At least where they did go, in the very heavy areas, carding rooms, crushing rooms, and so forth, they were able to have sharply decreased the amount of dust. There is some evidence now coming out of Dr. Knox's studies that where they had very stringent precautions, the incidence of lung cancer has gone down sharply.

Mr. Esch. I was going to ask, do you have evidence to show their record in comparison with ours, for example?

Dr. Selikoff. Well, they have no overall nationwide records either because in 1931 they made the wrong assumption that only very heavy exposure is dangerous, so they only protected the very bad places.

In retrospect, they would now like to get these 35 or 40 years back and protect all of the factors. They don't have that opportunity but we have that opportunity now.

I have in the last several days been in contact with some industry representatives and we are going to schedule a meeting just like this for 2 months from now under the aegis of the New York Academy of Sciences, where we hope to begin to make the first steps to cleaning up this trade.

Incidentally, with regard to your injunction to asbestos workers, you might not be far off. Mr. Hutchinson, who is in the room, president of the Asbestos Workers Union, has published in his national journal, all of the details concerning smoking. He has a special booklet about the dangers of insulation trade and it has been sent to all of the insulation workers and we hope there will be a very sharp reduction of smoking among them.

In other words, we want the employers to help in cleaning up the trade, to protect all of the insulation workers, to protect all of the



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construction workers, and at the same time we are taking action on the part of the men working with this. We had a meeting under the guidance of the Public Health Service last month to design new masks for insulation workers.

In other words, we are going to try to attack this on a broad basis but I hope your committee will be able to prepare legislation that would assist all of us who are working in this field on an industrywide basis in correcting these conditions.

Mr. ESCH. I am sure we want to get the benefit of your testimony. I am pleased to see you have decided both in Great Britain it was a cooperative attitude, involving the expertise and cooperation of labor and management and government attacking the problem and your attitude here, too, is it should be a cooperative program.

This is on a broad basis with the Government programs being the coordinator of the program.

Dr. SELIKOFF. Yes, sir.

Mr. ESCH. Thank you very much.

Mr. O'HARA. Mr. Steiger.

Mr. STEIGER. I have no questions, Mr. Chairman.

The testimony has been extremely important and very, very interesting and I am grateful that you are here this morning.

Thank you.

Mr. O'HARA. Mr. Selikoff, you have been studying asbestos workers since 1942 and I noticed in your testimony where you make reference to the experience of uranium miners and you suggest that the hazard in uranium mining has been known since, I think, 1880.

That was some Eastern European study, I think.

Dr. SELIKOFF. Yes, that was the famous instance of the Schneeberg Mines in Saxony, where in 1879 cases of fatal lung tumors were reported among the workmen in this mine and to this day we still have workmen in the same mine dying of lung cancer. They are now under the control of the East German Government and unfortunately we do not have accurate information on what is going on.

Mr. O'HARA. Well, I am sure you have kept up a continuing study of that but it is a particular interest of mine because 6 or 7 years ago I was the sponsor of a piece of legislation which was adopted providing for a study of safety conditions in the mining industry including a study of exposures to radon daughters in the uranium mining industry.

Then the study took a couple of years to complete and it conclusively demonstrated what had already been conclusively demonstrated many times before, that is to say, that these exposures resulted in a much higher incidence of lung cancer among uranium miners and that if one were to reduce the exposure levels you have sharply reduced the incidence of lung cancer among uranium miners.

So I sponsored a bill to provide for a safety program in these mines. That was enacted into law. That was about 3 years ago. I think 2 or 3 years ago. In the meantime, Dr. Holladay and others had been working with the States, and working with the industry and there had been dozens of meetings, giving all of the information on this, yet there was no significant improvement in conditions in the mines after all of these meetings and all of these discussions and for the very reasons that you detail—ventilation in many of these mines was



a very expensive proposition and in fact some of these mines could not be brought through any mechanical ventilation means within the suggested limits of exposure that Dr. Holladay and his colleagues suggested was the proper one.

So as a consequence no one was willing to undertake the competitive disadvantage of installing that type of equipment when the fellow in the next State did not have to.

The same thing was true of ventilation. If the State of Utah got tough in its program, their uranium operators would be at a competitive disadvantage with the people in New Mexico and the people in Arizona, and so forth.

As a consequence, very, very little has been done.

Now the situation is not dissimilar, the length of time is a little different, but you have known and the industry has known and Public Health authorities have known for sometime, have they not, of these hazards associated with the asbestos industry?

Dr. SELIKOFF. Yes.

Mr. O'HARA. I think you suggested that around—well, you mentioned a study that had been published some years ago with respect to this problem.

Dr. SELIKOFF. 1955, the chief inspector of factories of Great Britain.

Mr. O'HARA. Yes, but published here in the United States?

Dr. SELIKOFF. We had a very good study done on the risks of asbestos published by the Public Health Service in 1938.

Mr. O'HARA. 1938?

Dr. SELIKOFF. Yes, sir.

Mr. O'HARA. Then, you have recited for us a number of more recent confirmations and the results of which have been widely disseminated. I read about them in the newspaper. Tell me what has happened in the industry to improve conditions over the past years, over the years you have been intimately associated with the problem?

Dr. SELIKOFF. Mr. O'Hara, if very much had happened, I wouldn't be here.

Mr. O'HARA. So it is not because this takes anyone by surprise, it is just that as the figures keep coming in as the exposure period of these workers gets up to the point—as it is now doing in the uranium industry, of course, where we have known for a long time what was going to happen but it has not started happening until recently because they need 15 or 20 years of exposure really and they are just now getting it—the same thing in connection with your studies that started in 1942, but very, very little is happening and that is what disturbs me. I am not so worried about the mechanics of it, whether the States or industries or anybody else does it. I don't give a damn who does it just so it is done and I am not going to get tied up in a great big knot over who ought to be doing what for whom, because I am going to insist that before we get through here we do something effective. I am not particular about just how we do it but that we do something effective.

I want to get the best conditions we can find but I am not going to get into an ideological debate over the proper operation of the Federal system and let that prevent me from doing something effective.

You know, I read an interesting book a few years ago about the potato farming in Ireland and the starvation of tens of thousands of



people. The government there at that time was a government of relative good will, they had great sympathy for the problems of the people in Ireland. They wanted to do something. They had the means at their disposal to save the lives of tens of thousands of people but they didn't do it and the reason they didn't is because effective measures would have violated some of the conventional economic wisdom of the day.

You just couldn't do things like that, it was not, you know, it was entirely wrong in an ideological sense, to take the steps that were necessary, so palliatives and half measures were attempted for years and as a consequence a lot of people died.

Well, that is an entirely different subject but I think we have been in the same kind of a problem in this field of occupational health and safety and I am not going to let a theory stand in the way of some effective action if I can help it.

Your testimony has been very helpful, Doctor, and thank you very much.

Mr. O'HARA. Our next witness will be Mr. John Logan from the Manufacturing Chemists' Association. Mr. Logan is also of Universal Oil Products Co.

STATEMENT OF JOHN O. LOGAN, UNIVERSAL OIL PRODUCTS CO.; CHAIRMAN, BOARD OF DIRECTORS, MANUFACTURING CHEMISTS' ASSOCIATION, INC.; ACCOMPANIED BY C. U. DERNEHL, M.D., UNION CARBIDE CORP.; G. L. GORBELL, MONSANTO CO.; AND LLOYD SYMINGTON, GENERAL COUNSEL

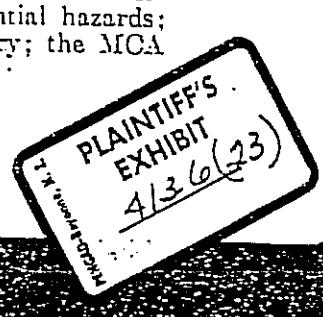
Mr. LOGAN. Mr. Chairman and committee members, I am John Logan, chairman of the board of directors of the Manufacturing Chemists' Association, on whose behalf I am appearing here today. I am currently president of the Universal Oil Products Co. and a former executive vice president of Olin Matheson Chemical Corp.

Accompanying me, as technical experts, are Dr. C. U. Dernehl, chairman of the occupational health committee of the association; Mr. G. L. Gorbell, former chairman of the Association's safety and fire protection committee; and Mr. Lloyd Symington, general counsel.

The Manufacturing Chemists Association is a nonprofit trade association of 183 United States and 14 Canadian company members representing more than 90 percent of the production capacity of basic industrial chemicals within these countries. I might add that our operations cover 14,000 plants and roughly 900,000 employees.

One of the major objectives of the association is to provide leadership and guidance in the development and promotion of safe practices in the manufacture, transportation, handling, and use of chemicals.

Our safety program was originated in 1946 and, as some indication of our achievements, I would like to submit a collection of our safety publications. This includes copies of our 95 chemical safety data sheets which enjoy worldwide acceptance as authoritative references on the hazards and safe handling of chemicals; Safety Guides covering miscellaneous chemical activities presenting potential hazards; Case Histories of Accidents in the Chemical Industry; the MCA



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