

Testimony of  
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On Asbestos Related Diseases – Medical Criteria, Populations at Risk and Disease Projections

Before the Senate Judiciary Committee

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Chairman Hatch, Senator Leahy and members of the committee, I want to thank you for the opportunity to appear before the committee to testify on medical and diagnostic criteria for asbestos-related diseases.

#### MY BACKGROUND

My name is Laura S Welch. I am a physician, board certified in internal medicine and occupational medicine, licensed to practice here in DC and in Maryland. For many years I have had an active medical practice and treated many workers with asbestos-related disorders. I am currently medical director for The Center To Protect Workers Rights, a research institute affiliated with the Building and Construction Trades department of the AFL-CIO. I am also the author of over 50 peer-reviewed publications and technical reports in the field of occupational and environmental medicine, and am currently an investigator on six research projects in the field. I have served as a consultant to many federal agencies, including OSHA, NIOSH, CDC and the NIH. I have special interest and experience in health and safety in the construction industry.

I have worked with several union-management committees on health and safety issues, including Boeing-United Auto Workers, and Rail Management and Rail Labor for the US railroad industry. Since 1987 I have worked with the Sheet Metal Occupational Health Institute (SMOHIT), a labor-management trust for the unionized segment of the sheet metal industry. SMOHIT has sponsored a medical examination program for sheet metal workers in the United States and Canada, to detect occupational lung disease and

asbestos-related disease in particular. I have published several papers describing the findings of asbestos-related disease in this group of construction workers , and am now looking at changes in patterns of disease over time in order to project disease rates into the future. Over the past several months I have been participating on behalf of the AFL-CIO in discussions with the Asbestos Study Group, interested insurance companies, and other parties on establishment of an administrative system for asbestos compensation.

## THE LEGACY OF ASBESTOS

Decades of uncontrolled use of asbestos, even after its hazards were known, have resulted in an occupational disease crisis in the United States and throughout the world of monumental scope. In this country, from 1940 to 1979, 27.5 million workers were occupationally exposed to asbestos in shipyards, manufacturing operations, construction work and a wide range of other industries and occupations; 18.8 million of these having high levels of exposure . As a result hundreds of thousands of workers and their family members have suffered or died of asbestos-related cancers and lung disease, and more than a million more cases are expected. In this year alone, in 2003, almost 10,000 people in the United States are expected to die from asbestos-related diseases. Because of the long lag between exposure and the development of cancer or other asbestos diseases, the asbestos disease epidemic is only now peaking, and will be with us for decades to come. There is no disputing the fact that many have died of asbestos related disease, and many more will die in the future. Everyone here today must agree that a remedy is needed; we now must agree on what remedy is fair and adequate.

## OVERVIEW OF ASBESTOS RELATED DISEASE

There are several medical diseases that occur as a result of asbestos exposure. The ones of greatest concern and importance are pleural plaques and thickening; asbestosis; lung cancer; colon, laryngeal, pharyngeal cancer; and mesothelioma. For many workers, these diseases are disabling or fatal. For each disease there is a standard set of tests, and generally accepted criteria, for diagnosis.

### Pleural Plaques and Thickening

Pleural plaques are also called pleural fibrosis, pleural thickening, and pleural asbestosis. A majority of persons with heavy exposure to asbestos develop pleural abnormalities. The pleura is a thin lining that surrounds the lung. Asbestos fibers that are breathed into the lung are transported to the outside of the lung and cause a scar to form in the pleural lining. When these scars reach a certain size they are visible on chest x ray as a plaque.

Most of these plaques alone do not cause disability, but they do tell us that significant exposure has occurred, and that other asbestos related diseases may be present. However,

some types of plaques can cause loss of lung function. Scars that involve the costophrenic angle, the angle between the base of the lung and the diaphragm, can cause loss of lung function, as can extensive plaques on both sides of the lung.

#### Parenchymal Asbestosis (Pulmonary Asbestosis)

Parenchymal asbestosis is a scar formation in the substance of the lung itself. These scars can interfere with lung function, for they block the transport of oxygen from the air in the lungs into the blood vessels that travel through the lungs. Oxygen can only cross the membranes of the lung if they are thin; asbestosis causes them to thicken. As a general rule the greater the exposure the more the disease, i.e. there is a dose-response relationship between exposure and disease. However, some people seem to form scars more readily and so we see a variety of disease from the same level of exposure.

These scars are visible on x ray in most cases but certainly not all cases. High resolution CT scan of the chest can find disease not seen on a plain chest x-ray, and is becoming an important component of the standard practice for the diagnosis of asbestosis.

The International Labor Organization developed a way of grading chest x-rays for dust diseases of the lung. The most recent version is the 1980 Classification of the Radiographic Appearance of Pneumoconioses (dust diseases of the lung). This system is accepted around the world. It provides a standard notation, so that if one reader calls a film a "1/1" another reader will know what the first reader is referring to. The classification uses a 12-point scale to define the degree, or severity, of increased lung markings. Classification of pleural changes (involvement of the membrane lining the chest wall and the lung) uses a separate scale, with specific notations made for side of the chest, whether or not the plaques contain calcium deposits, and the specific type, length, and width of the thickening of the pleura.

This 12-point scale runs from 0/- to 3/+; a "0" film is normal and a "3" film is the most severe scarring. Each reading on the scale is characterized by a number between 0 and 3, and a second number, separated by "/". The first number, preceding the "/", is the final number assigned to that film by that reader. The second number, following the "/", is a qualifier. The numbers 0, 1, 2, and 3 are the main categories. An x-ray read as a category 1 film might be described as 1/0, 1/1, or 1/2. When the reader uses 1/1, he is rating the film as a 1, and only considered it as a 1 film. If he uses 1/0, he is saying is rating the film as a "1", but considered calling it a "0" film before deciding it was category 1. Finally, when the reader uses 1/2, he is saying he is rating the film as a "1", but did consider calling it a "2" film. In clinical practice, any category "1" film is abnormal; therefore a 1/0 film is consistent with asbestosis.

Even though the ILO system was designed to standardize reading x-rays for asbestosis,

studies using the classification in asbestos exposed workers have found readers often disagree about classification of the same x-rays. Using the classification is somewhat of an art. Body size, weight, position of the person during the x-ray, and x-ray technique affect the amount of scarring that is visible on an x-ray. If an x-ray is less than perfect, one reader may think he can be sure scarring is present, while another cannot be sure and grades the film with a lower score for scarring.

The “best” readers agree 80% of the time with each other; 20% of the time they assign a different score to the same x-ray. If the scarring is extensive, a difference of one grade on the scale is not important. But if the x-ray shows less extensive scarring, a difference of one grade can be the difference between making diagnosis of asbestosis or deciding asbestosis is not present. For this reason experts agree that the x-ray alone should not be used to make a diagnosis of asbestosis; the examining physician should use the occupational and medical history, results of pulmonary function testing, and other medical data to reach a diagnosis. Experts also agree that asbestosis can be present in the lung even though the x-ray is normal using the ILO classification system.

High resolution computed tomography (HRCT) is now widely accepted as a diagnostic tool for asbestosis and asbestos-related pleural scarring. HRCT is an excellent technique for diagnosis of asbestosis and asbestos-related plaque. Recent studies show that readers using a scoring index were more accurate and reliable in the diagnosis of asbestosis than when using plain chest x-rays. This study concluded that “the examined HRCT scoring method proved to be a simple, reliable, and reproducible method for classifying lung fibrosis and diagnosing asbestosis also in large populations with occupational disease, and it would be possible to use it as a part of an international classification”. Expert consensus supports this conclusion.

Disease from asbestos is also detected on pulmonary function testing, and PFTs are used to quantify the level of lung impairment due to asbestosis. Asbestosis makes the lung stiffer and smaller, so the volume of air in the lungs is decreased. Oxygen transport as measured by the diffusion capacity is also decreased. Abnormalities are measured using spirometry, lung volumes, and gas exchange testing. Spirometry is reliable and reproducible when performed according to the specifications set by the American Thoracic Society (ATS). Determination of lung volumes can be done by the gas dilution method or by body plethysmography; both are standard measures and also are reliable and reproducible. The ATS also sets standards for diffusion capacity, which ensure uniformity among laboratories and reproducibility.

Asbestosis can affect each of these tests without necessarily showing an abnormality in the other two. Spirometry and total lung capacity both measure lung volume, but one may be abnormal while the second remains normal. The diffusion capacity measures a decrease in oxygen exchange in the lung, and so is measuring a different function of the

lung than lung volumes. Asbestosis can just as easily be manifest with a decreased lung volume or a decrease in gas exchange; neither is a better, more sensitive or more accurate test, and both types of tests must be used in any set of diagnostic criteria. The diffusion capacity has been shown to correlate with the severity of fibrosis found on pathologic examination of the lung, and a reduction in diffusion capacity can precede x-ray changes.

The changes in pulmonary function at times can be subtle, and test results should be interpreted by someone with experience in asbestos related diseases. Pulmonary exercise testing can be used to clarify subtle abnormalities, and any compensation system must allow the examining physician to submit a medical report and rationale based on accepted medical tests. Because the diagnosis of asbestosis or any other asbestos-related disease can be made with a range of medical tests, it is essential that any compensation system include a medical panel to review cases that do not meet the most common diagnostic criteria. As just one example of a study that supports the need for a medical panel, Kipen reported that 18% of insulators who had asbestosis found on pathological examination the lung had a normal chest x-ray . If we were to require a 1/0 film in all cases of asbestosis, these workers would be excluded. Pathological examination is not required in the absence of x-ray abnormalities; a combination of CT scan and exercise testing can reasonably approximate the specificity as tissue examination.

Once this scar formation takes place it is irreversible. It gets worse in some cases, even after exposure stops. Factors that are associated with worsening scarring include the severity of disease (the more the scarring, the more likely it is to get worse), and the amount and intensity of exposure to asbestos. Because of the damage to the lungs a person with asbestosis is at increased risk of lung infections and so should get regular medical care and influenza vaccines.

#### Determination of Impairment

Lung function can be measured accurately and reliably with pulmonary function testing. The American Medical Association has developed guidelines for the evaluation of impairment from many diseases including lung disease . The AMA Guidelines have been incorporated into compensation systems in states, and are widely used by physicians. The diagnosis of asbestosis depends in part on characteristic findings on pathology, chest x-ray or CT scan, but impairment must be measured with pulmonary function testing.

The AMA Guide states that each worker should undergo spirometry and DLCO as part of the evaluation of impairment, and exercise testing can add additional information if needed. Using a combination of forced vital capacity (FVC), forced expiratory volume in one second (FEV1), DLCO, and oxygen consumption on exercise testing (VO<sub>2</sub>max) the patient is placed into one of four levels. The first level under the AMA has no impairment, the second level is between the lower limits of normal lung function and

60% of normal; the third level is less than 60% and more than 50% of normal lung function; the most severe level is a loss of more than 50% loss of lung function. The illustration in the AMA Guide for the second level is a good example to use here:

Fifty four-year-old retired power plant mechanic with a history of asbestos exposure from age 18-37. He is short of breath when walking on level ground with other people his own age. His chest x-ray shows asbestos-related pleural changes, but no parenchymal asbestosis. His FVC is 64% of predicted, his FEV1/FVC ratio is 81%, and his DLCO is 78%.

This man has asbestos related disease. He has lung impairment significant enough to make him short of breath with normal walking; in my experience, this degree of impairment would make him unable to continue in a physically demanding job. As noted in the example, this man is retired at age 54. He would fall into the Manville Class III.

At the highest level using the AMA Guides, where the worker has lost more than 50% of lung function, the worker would be unable to perform activities of daily living, such getting dressed, taking a shower, cooking dinner, or any minimal work around the house. Most of this group will still be in Class III under Manville.

Not all workers with asbestosis will fit the specific criteria set by legislation; there must be a panel of physicians to review medical exceptions. All claimants with significant illness due to asbestos exposure will not be able to meet the eligibility criteria for the compensation categories in any program. Some may have died before the required testing could be completed. Others may have medical conditions that obscure or complicate the interpretation of the required testing. Rather than try to establish diagnostic criteria for each possible set of findings, a more efficient approach would be to establish a medical panel to review and reach determinations on these cases.

One example of a case that should be reviewed in this way is a worker who has demonstrable impairment but still has test results that are in the normal population range. Comparing an individual's results on spirometry, lung volumes and diffusion to the normal range for the population is how we generally determine impairment. In some cases we know the person's pre-disease lung function, and so can compare current testing to his own normal tests from the past. This comparison allows much better precision in estimating impairment. The AMA Guides explicitly state that "in individuals where the pre-injury or pre-disease values differ from the population listed values, the examiner may depart from the population listed normal values for determining an impairment rating..." Such a case would be reviewed by a medical panel.

Determining That Impairment on PFTs Is Caused By Asbestos

Asbestos scarring of the lung primarily causes a reduction in lung volume, leading to a reduction in FVC and total lung capacity on pulmonary testing (restrictive disease). Asbestosis also causes reduction in diffusion capacity, as discussed above. Smoking causes a reduction in air flow out of the lung (obstructive disease), and causes an increase in lung volume. Since the pattern of injury is different, we can establish medical criteria that differentiate asbestos-related diseases from smoking-related diseases. The ratio referred to as the FEV1/FVC ratio serves as a measure of the amount of obstructive lung disease present, and is an objective test that can be incorporated into compensation criteria. Workers can have both diseases, and those workers should be compensated for the asbestos-related disease they do have.

### Lung Cancer and Respiratory Cancers

All major types of lung cancer are caused by asbestos. Lung cancer is incurable in 90% of cases at the time of diagnosis, and these people usually die within a year. Numerous studies show that there is a dose-response relationship between exposure to asbestos and the risk of lung cancer, with increasing exposure leading to increasing risk of disease. Workers with asbestosis have a higher risk than other exposed workers, but the asbestosis may simply be a surrogate measure of exposure, for significant asbestos exposure is required to cause asbestosis. Asbestosis is not a necessary intermediary for development of asbestos related lung cancer. Workers with pleural plaque do not appear to be at higher risk for lung cancer than their co-workers with similar exposure who did not develop plaque. Pleural plaque is a convenient marker of prior exposure to asbestos, and so has been used as a surrogate for significant occupational exposure in bankruptcy settlement agreements, but the risk of lung cancer is not restricted to workers with pleural plaques.

The Helsinki Criteria establish an exposure level of 25 fiber-years, or the equivalent exposure using an occupational history, as a level of exposure that significantly increases the risk of lung cancer. Several European countries have established this or a similar level of exposure as the criterion to be used for compensation of a lung cancer in an asbestos exposed worker.

Smoking and asbestos act in concert to cause lung cancer, each multiplying the risk conferred by the other. In a large study of asbestos insulation workers in North America, non-smoking asbestos workers were five times more likely to die from lung cancer, smokers not exposed to asbestos were approximately 10 times more likely to die from lung cancer, and asbestos workers who smoked were more than fifty times more likely to die from lung cancer. Asbestos workers who stopped smoking demonstrated a sharp decrease in lung cancer mortality

Although smoking does increase the risk of lung cancer, this effect does not detract from the risk of lung cancer attributable to asbestos exposures. Any compensation system must

affirm that when a worker has significant exposure to asbestos he is eligible for compensation for lung cancer.

The risk of cancer of the pharynx and larynx is also increased by asbestos exposure. Smoking also contributes to the development of these diseases, and the risk from asbestos is thought to multiply the risk from smoking as it does for lung cancer.

#### Colon Cancer and Gastrointestinal Cancer

There is also a higher incidence of cancers of the gastrointestinal tract among asbestos workers. In people exposed to asbestos for more than 20 years, the rate of colon cancer is increased by a factor of 2. It is important for all asbestos-exposed workers to have regular check ups with their doctors, to look for early signs of colon cancer.

#### Mesothelioma

Mesothelioma is a rare cancer of the pleura, the lining of the lung, and the peritoneum, the lining of the abdomen, that occurs in persons exposed to asbestos. Mesothelioma can result from a limited exposure to asbestos. Virtually all of mesotheliomas in this country are caused by past exposure to asbestos. This cancer is almost impossible to treat and is usually fatal within 18 months of diagnosis.

#### POPULATIONS AT RISK AND PROJECTIONS OF FUTURE DISEASE

Central to the development of sound and appropriate policies to address the asbestos disease crisis is an understanding of the populations at risk and the extent of future disease that is likely to occur.

Nicholson, Perkel and Selikoff set the standard on this subject two decades ago at the Mt. Sinai School of Medicine<sup>2</sup>. Their analysis estimated that from 1940 to 1979, 27.5 million workers were occupationally exposed to asbestos, with 18.8 million of these having high levels of exposure. Groups at highest risk were insulators, shipyard workers (many who worked during World War II) and workers engaged in the manufacture of asbestos products. Other high- risk industries and occupations included other construction trades, railroad engine repair, utility services, stationary engineers, chemical plant and refinery maintenance, automobile maintenance and marine engine room personnel.

Many of these workers were in the group sometimes referred to as the “first wave” of asbestos exposed workers – those directly involved in the manufacture or installation of asbestos insulation or products before there were any control measures or standards in place. Exposures for some of these workers regularly exceeded 20 – 40 f/cc, levels that

are 200 – 400 times the current OSHA standard of 0.1 f/cc, with exposures of several months resulting in an increased risk of mesothelioma and lung cancer.

The 1982 Nicholson analysis projected that the occupational exposures that occurred between 1940 and 1979 would result in 8,200 – 9,700 asbestos related cancer deaths annually, peaking in 2000, and then declining but remaining substantial for another 3 decades. Overall, the Nicholson study projected that nearly 500,000 workers would die from asbestos related cancers between 1967 and 2030.

It is important to point out that these projections did not include mortality or morbidity from non-malignant asbestos diseases, which have or will affect even greater numbers of workers. Nor do these projections reflect the full risk of disease among populations who were exposed in the 1950's and 1960's, but didn't have sufficient latency for asbestos related diseases to be manifested at the time the Nicholson study was conducted. This includes many of the building trades and construction workers who not only installed asbestos products, but also were exposed during removal, demolition and renovation. This group is often referred to as the "second wave" of asbestos exposed workers, who account for much of the disease that is being manifested today. Similarly, the Nicholson study did not address the risk of exposures that occurred after 1979. While, OSHA and EPA regulations reduced asbestos exposures in the 1970's, strict regulation of asbestos did not occur until 1986. Moreover, non-compliance by some employers means, even today, that some workers are exposed to levels of asbestos that place them at increased risk of disease.

Due to the long latency of most asbestos related diseases (30 – 40 years or longer), many of the cases of disease that are being manifested today are among workers who were first exposed in the 1940's, 1950's and 1960's, before asbestos was regulated and controlled. It is worth noting that a major portion of the asbestos-related disease that is occurring is among workers who were exposed while in the military or employed in shipyards doing work for the government. In fact, review of Manville claims data for the period of 1995 – 2001 shows that more than 16 percent all lung cancer claims and more than 30 percent of all mesothelioma claims came from military personnel and shipyard workers. The federal government clearly played a major role in contributing to the asbestos disease crisis and should bear some responsibility in any asbestos disease compensation program.

Nicholson's work provides a good foundation for estimating the future cases of asbestos disease, and has been utilized in many of the models to develop future asbestos disease claims projections, including claims projections made by the ARPC for the Manville Trust. However, it is important to recognize that there is a good deal of uncertainty associated with these projections. That uncertainty is reflected in the wide range of future disease projected by Manville and others (ranging from a low of 750,000 future claims to

a high of 2.6 million future claims) and the fact that past projections have generally proved to be too low.

There are a number of factors responsible for this uncertainty. As noted above, the Nicholson study and model projected cancer mortality related to asbestos. There have been no similar studies or estimates made for the non-malignant asbestos related diseases, such as asbestosis. All of the estimates in the projections for future disease and future claims for non-malignant disease have been based upon ratios of non-malignant disease to lung cancer cases or claims, not independent estimates of non-malignant disease.

Epidemiological evidence shows that hundreds of thousands of workers have developed and will develop non-malignant disease. The claims information from the Manville Trust shows the majority of claims from 1995 – 2002 were for non-malignant diseases. While we know that certain groups of workers are at increased risk, and that these diseases will decrease as a result of reduced exposures, the extent and magnitude of non-malignant asbestos disease is not as well defined as the malignant diseases.

I would add that a recent analysis I conducted of data available from a national screening program for sheet metal workers shows a direct relationship between the decade these workers started work and the prevalence and severity of non-malignant disease. Workers who started work in the 1960's and 1970's have much less disease than workers with the same length of employment in the trade who began work in the 1940's and 1950's. Based upon this data, and what we know about the reduction in asbestos exposures overtime, it appears that once we get through this next decade, when large numbers of cases are still expected, that the non-malignant diseases may fall off at a faster rate than what some of the estimates have projected.

Another factor that contributes to the uncertainty of asbestos claims projections relates to the number of individuals with disease who will file claims. All of the asbestos disease claims models are driven in large measure by past claims experience. That is, the models base future claims projections on what has happened in the past. For example, based upon past experience, the ARPC high-end estimate for future lung cancer claims assumes that 23 percent of individuals with asbestos-related lung cancers will file claims. While this may be a reasonable assumption, it is also quite possible that the claims filing experience in the future may change, which could lead to greater or fewer numbers of claims.

To be sound and fair, any asbestos disease compensation legislation must address this uncertainty and build in mechanisms to guarantee full coverage for all valid claims, even if claims exceed projected numbers.

SPECIFIC COMMENTS ON S 1125

S 1125 establishes medical criteria and an administrative mechanism for compensation of asbestos-related diseases. This bill mirrors the in large measure the medical criteria of the Manville 2002 Trust Distribution Process, but adds other requirements that narrow the group of workers who are eligible and make the application process much more burdensome. It also sets levels of compensation that are lower than total claims values and awards available in the current system. Overall, as constructed the bill will exclude the vast majority of workers with asbestos-related diseases from receiving any compensation, and provide very low levels of compensation for workers who have significant impairment and fatal diseases.

The serious shortcomings of S 1125 include the following:

1. S 1125 relies in large measure on the medical criteria in the Manville 2002 TDP. The criteria in the 2002 TDP are much more restrictive than the criteria in the 1995 Manville TDP, which in my view were medically sound. Changes in the medical criteria between 1995 and 2002 included the removal of the tests that are the most sensitive for diagnosis of asbestos-related diseases, including oxygen diffusion and CT scans. For example, the medical literature states clearly that the DLCO is often the first test to become abnormal in asbestosis; this test was removed from the 2002 medical criteria. The effect of these changes will be to reduce the number of workers who qualify for compensation. Such changes may be appropriate in the context of a bankruptcy trust that is running out of money and has to decide how to allocate limited resources; that is a decision to be made by the Trust. But, any new system should be based soundly in medicine, and allow for the use of all medically recognized diagnostic tests.
2. S 1125 requires claimants to receive a diagnosis from a “treating” physician, instead of permitting diagnosis by a qualified physician as is required by the Manville Trust. The use of the term “treating” in S 1125 implies that there must be a continuing relationship between the asbestos exposed worker and the doctor submitting the report. A pulmonary specialist who examines a patient and makes recommendations back to the patient’s primary care doctor is not a treating physician. Most occupational medicine specialists serve as consultants to the patient’s treating physician. Our health care system encourages each patient to have one treating physician with other physicians acting in consultation, so that care is coordinated; this is also sound medical practice. However, we want the diagnosis of asbestosis to be made by the most qualified physician, even if that physician is not the patient’s primary care doctor.
3. As part of the medical diagnosis, S 1125 requires independent verification of the duration, proximity, regularity and intensity of exposure. Physicians do not have any way of independently verifying exposures that occurred 30 – 40 years ago, if by “independent” the legislation means from a source other than the worker. There generally are no records of air monitoring, nor is there any practical way a physician could verify

the worker's exposure. The American Thoracic Society Statement on the Diagnosis of Non-Malignant Diseases Related to Asbestos 3, describes the details a physician should elicit in taking an occupational history from the asbestos-exposed worker. The ATS says the physician should obtain a reliable history of exposure, but does not suggest the physician attempt to look at other data sources. The existing bankruptcy trusts have mechanisms for assuring the validity of the worker's history of exposure to asbestos; this review is performed by the trust, not by the physician.

4. S. 1125 imposes other heavy evidentiary burdens that are difficult if not impossible to meet. Claimants are required to submit a detailed description of their asbestos exposure, including product identification information. If this is a no-fault system, there is no need for product identification.

The bill also requires that original x-rays and spirometric tracings be submitted with every claim, which seems to indicate that every claim will be subject to independent medical review. This level of review is unnecessary and will lead to conflicts and delays. Manville and other trusts require only the physician diagnosis and summary of exposure history. Detailed records are only required on a case-by-case basis when individual medical review is deemed to be warranted. This same type of approach should be followed in any national asbestos trust.

5. Both the Manville 2002 TDP and S 1125 require a 2/1 film as part of the definition of severe asbestosis. This requirement is not medically based. The density of parenchymal disease on chest x-ray has not been shown to correlate with impairment, and impairment can be directly measured with pulmonary function testing. Once the diagnosis of asbestosis is established, pulmonary function testing should be used to determine severity. At the highest level of impairment using the AMA Guides, where the worker has lost more than 50% of lung function, the AMA Guides describe that the patient would be unable to perform activities of daily living, such getting dressed, taking a shower, cooking dinner, or any minimal work around the house. Most of this group will still be in Class III under S 1125, and receive an award of \$40,000 (reduced by collateral offsets). Clearly, compensation should be commensurate with impairment and disability, which is not the case under S 1125. The American Thoracic Society is finalizing diagnostic criteria for asbestosis, and these criteria should be incorporated into legislation when they are available.

6. S 1125 requires occupational exposure to asbestos prior to Dec. 31, 1982. This date makes sense as part of the Manville TDP since payments from that trust fund are keyed to exposure to Manville products specifically. It makes no sense as part of this legislation; as written the bill would exclude all asbestos victims from compensation if exposed on or after Jan. 1, 1983.

7. S 1125 appears to incorporate the Manville 2002 criteria for lung cancer, but sets very different levels of compensation. Manville 2002 assumes that the usual lung cancer victim will have been a smoker as well as having being exposed to asbestos; non-smokers are expected to apply for additional levels of compensation. This is a sound assumption given the fact that a large proportion of the asbestos exposed population were smokers and the fact that 90- 95% of all asbestos related lung cancers occur among smokers. S 1125 sets a very low value of \$100,000 for lung cancer in a smoker (reduced by collateral offsets). By comparison, under the Manville Trust the scheduled claims value for a lung cancer in a smoker that meets the criteria of Level VII is approximately \$ 285,000 - \$380,000 (assuming that Manville's values represent one-quarter to one-third of a total claim value). It is important to treat all asbestos-related disease victims fairly, including those who were or are smokers. As described above, we can identify the lung cancers for which asbestos was a significant contributing factor, among smokers and non-smokers.

8. Level II as defined by S 1125 includes many workers with significant impairment, but there is no compensation awarded for this group of workers. This level includes workers with definite asbestosis who do not have a reduction in TLC or FVC below 80%. It also includes workers who have asbestosis combined with obstructive lung disease. Workers with asbestosis have a significant injury, and this group of workers now receives compensation from bankruptcy trusts and through a tort action. Sound medical criteria will identify those workers who have asbestosis, even if they also have some lung disease from smoking. Denying any compensation to this group of workers is not appropriate.

9. S 1125 limits compensation to those individuals who meet the medical and exposure criteria set forth in the bill. There is no provision for medical exceptions or for individuals to seek individual evaluation for their claims. As noted above, not all individuals with asbestos-related disease fall within the categories defined by S 1125, particularly given its restrictive criteria that exclude accepted diagnostic tests. One of the groups who generally will not meet the exposure requirements set forth in the bill are family members who develop disease as a result of take-home exposures. The Manville Trust and other trusts provided for medical exceptions and individual evaluation of claims. Any national asbestos trust should also do so.

10. S 1125 includes no funding mechanism to ensure that all valid claims to the trust will receive compensation. As discussed, there is a great deal of uncertainty in the projections of future disease and claims, and the experience to date is that such projections have underestimated the numbers of disease claims. Any national trust must guarantee that victims of asbestos-related diseases receive full, fair and timely compensation for their diseases, particularly if it is the exclusive remedy for such claims. It is simply not acceptable or fair for the victims to bear the risk if disease and claims exceed current projections.

I appreciate the opportunity to appear before the committee today. I hope this testimony has helped you understand that asbestos-related diseases are real, and are affecting thousands of Americans every year in this country. These men and women went to work every day, helping build ships for our wars, power plants for our cities, the cars that we drive, and homes and schools for other Americans. I hope you see that there are accepted medical criteria for diagnosis of each of these asbestos-related diseases, which can be readily codified into an administrative compensation system. Any such system should be based on these medical criteria, and provide for fair, timely and guaranteed compensation to workers and others who have been made sick as a result of asbestos exposure. Thank you.