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S. 742 AND DRAFT LEGISLATION TO BAN ASBESTOS IN PRODUCTS

HEARING

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENT AND HAZARDOUS MATERIALS

OF THE

COMMITTEE ON ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

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[1] Mr. Lemen did not answer submitted questions for the record in time for printing.

S. 742 AND DRAFT LEGISLATION TO BAN ASBESTOS IN PRODUCTS

THURSDAY, FEBRUARY 28, 2008

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENVIRONMENT
AND HAZARDOUS MATERIALS,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 12:36 p.m., in room 2322 of the Rayburn House Office Building, Hon. Albert Wynn (chairman) presiding.

Members present: Representatives Pallone, Capps, Solis, Baldwin, Barrow, Green, and Shadegg.

Also present: Representative McCollum.

Staff present: Dick Frandsen, Caroline Ahearn, Karen Torrent, Rachel Bleshman, Lauren Bloomberg, Ann Strickland, Jerry Couri, David McCarthy, and Garrett Golding.

OPENING STATEMENT OF HON. ALBERT WYNN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. WYNN. Good afternoon, everyone. I would like to call the meeting to order. Today we have a hearing on S. 742, the Ban Asbestos in America Act of 2007, and draft legislation referred to as the committee print to Ban Asbestos in Products. For purposes of making opening statements, the chairs and ranking members of the subcommittee and the full committee will each be recognized for 5 minutes. All other members of the subcommittee will be recognized for 3 minutes. Those members may waive the right to make an opening statement, and when first recognized to question witnesses, instead, add those 3 minutes to their time for questions. Without objection, all members will have 5 legislative days to submit opening statements for the record. The chair would now recognize himself for an opening statement.

Today's legislative hearing is, as I indicated, on S. 742, the Ban Asbestos in America Act of 2007, and our draft legislation called the committee print to Ban Asbestos in Products. The Senate bill and the committee print would amend the Toxic Substances Control Act. We will not focus today on the research and study provisions in S. 742, involving certain Federal health agencies, since they are primarily within the jurisdiction of the Subcommittee on Health. Rather, we will focus on the provisions of S. 742 that amend TSCA.

Each year, an estimated 10,000 Americans die as a result of asbestos exposure. According to an Environmental Working Group

study, more than 43,000 Americans have died from asbestos-related diseases since 1979. Asbestos is classified as a known human carcinogen, according to the World Health Organization, EPA, and other public-safety organizations. No safe level or threshold level of exposure to asbestos has been established.

The primary human exposure pathway from asbestos is through breathing particles that are released into the air. Asbestos fibers can be released into the air as a dust when used in manufacture, processing, use, demolition, or disposal of asbestos-containing products. Medical studies show that people who are exposed to airborne asbestos have an increased risk of developing respiratory diseases such as asbestosis, a progressive, long-term disease of the lungs, which leads to scarring of lung tissue; mesothelioma, a rare form of lung cancer that is almost always fatal; and lung cancer, a malignant tumor that invades and obstructs the lungs' air passages.

In a 1989 final rule, the EPA sought to phase-out and ban most of the asbestos-containing products manufactured in the United States. Unfortunately, EPA's rule was overturned in 1991 by the Fifth Circuit Court of Appeals. As a result of the Court's decision, only six asbestos-containing products remained banned, flooring felt, roll board, corrugated commercial and specialty paper, and in new uses of asbestos in products that have not historically contained asbestos. According to the World Health Organization, with some exceptions relating to certain uses, more than 40 countries have banned asbestos, including all members of the European Union. Today, I am pleased to say that we are making progress towards a broad ban on asbestos in this country.

Last October, the Senate unanimously passed S. 742 introduced by Senator Patty Murray. The committee print contains many of these same provisions that amend ToSCA with certain changes and classifications. One of the most important changes in terms of protecting public health is that the ban on asbestos pertains to asbestos containing products. Based on technical comments provided by the EPA to our subcommittee, asbestos-containing products are defined as "any product, including any part, in which asbestos is deliberately added or used, or which asbestos is otherwise present in any concentration." We have heard many concerns from Government officials and scientists and public health doctors and victims groups and labor groups that the one-percent threshold in S. 742 is not protective of human health. It is not a health-based or risk-based standard. The 1-percent standard was adopted more than 30 years ago, and was related to the limit of detection for the analytical methods available at that time.

As we read S. 742, it provides no authority for EPA to adjust the standards to conform to the advances in science and testing methodologies. In a 2004 memorandum, the EPA's Office of Solid Waste and Emergency Response stated that the use of a 1 percent threshold as a trigger for cleanup of asbestos at Superfund sites may not be protective of human health. The memorandum also states that recent data from the Libby Montana Superfund site and other sites provide evidence that soil and debris containing significantly less than 1 percent asbestos can release unacceptable air concentrations of all types of asbestos fibers. At Libby, asbestos contamination from a nearby vermiculite mine has led to almost 200 deaths and

1,200 being diagnosed with lung abnormalities. Cleanup at Libby began in 1999, and more than $180 million has been spent, to date, with more to be done.

I understand that some have raised concerns about the possibility of asbestos in ambient air in the context of asbestos-containing products. As the legislation moves forward, we intend to work with all parties to address their concerns while maintaining public health protection.

I look forward to hearing the views of our witnesses today on S. 742 and the committee print. I want to mention that we added a witness to the third panel for today at the request of the ranking member of the subcommittee, less than 48 hours before the hearing. While I don't intend this practice to become a precedent, I think in the spirit of cooperation, we wanted to certainly accommodate this request.

At this time, I would like to enter in a statement. Senator Patty Murray, who introduced this bill, the Ban Asbestos in America Act of 2007, and Senator Johnny Isakson and Senator Barbara Boxer, cosponsors of the bill, have asked to submit a joint statement for the record, to present the merits of their legislation. Without objection, their joint statement will be included in the hearing.

At this point, it gives me pleasure to recognize the ranking member of the Subcommittee on Environment and Hazardous Materials. I believe this is your first formal hearing, so I am pleased to recognize the gentleman from Arizona, Mr. Shadegg.

OPENING STATEMENT OF HON. JOHN B. SHADEGG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Mr. SHADEGG. Thank you, Mr. Chairman, and I do want to acknowledge that this is my first hearing in the role of ranking member. I was able to secure that position upon the retirement of former Speaker Denny Hastert, and I am pleased to be here. As you know, you and I have worked together on many issues in the past and have had a cordial relationship, and I look forward to having that here on this subcommittee.

I do want to thank you for holding this hearing on this very important legislation. I think it is a critically important piece of legislation. I have the greatest sympathy for the victims of mesothelioma-I have some training in how to say it-the victims and families. This disease and other asbestos-related illness are serious illnesses that cause chest, lung and gastrointestinal cancers. They are horrible and debilitating diseases that no one wants to see perpetuated or go on.

In my State of Arizona, we do some asbestos mining, and in fact, we mine a unique form of asbestos called chrysotile. And years ago, when I was in the Arizona Attorney General's Office, we were shutting down a chrysotile asbestos site, and I went there and visited the workers, talked to the people on the site, and actually spent some time visiting with the life insurance salesmen who live in the area, who taught me a little bit about the difference between chrysotile asbestos and other forms of asbestos. So I think it is important that we shine light on this issue, that we study it, and that we consider it carefully.

I would be remiss if I didn't note that I am somewhat regretful that this hearing is occurring late in the day, late in the week, such there are not as many members present as I think either one of us would like. It would be much preferable that the hearing on this important topic were occurring when we had a better opportunity for attendance.

That being said, I am anxious to hear the testimony of our witnesses and to proceed. I believe that it is important to note that S. 742 did pass under unanimous consent with 100-percent support and no dissent in the Senate. I understand that is the other body, and we should act in our own fashion, but I think we should do so carefully and deliberately.

I must say, as an opening comment, that I am concerned about some aspects of the committee print. I am particularly concerned, and I will try to focus on this to the best I can in my questioning, with some of the definitions in the committee print. In the committee print, a new term "asbestos-containing product" appears. And Mr. Chairman, you just read this term, which defines products, and it says that the term covers any product, including any part of that product, to which asbestos is deliberately added, used in, or and you read these words, "is otherwise present in any concentration." I must say I have some concern with the language of "otherwise present in any concentration" because that is a vastly broader definition than is in S. 742, and I believe it raises issue of us pulling into this debate issues we do not intend to.

You just noted that asbestos can be airborne in the dust. At least it has been my understanding that when you set a standard that says we are regulating every product which has asbestos in any concentration, it is my understanding that that can mean, for example, scotch tape, where, as it is being manufactured, an ambient particle of asbestos got onto the scotch tape. Suddenly, it becomes an asbestos-containing product, and falls under the entire rubric of regulation, for example, which would cover asbestos insulation, or asbestos intentionally put into a product such as a break line. So I think that definition is one that gives me some very severe concern.

A second issue which I have in looking at the Senate past bill, 742, is issue of use by the Defense Department in defending this Nation and protecting our sons and daughters who are in uniform, and the different treatment of the two bills. It is my understanding of the wording of the committee print that under the committee print, the strictures on Defense Department are much more severe, much more problematic, and would open the Defense Department to citizen suits. I have concerns about citizen suits, certainly citizen suits against our Defense Department, at a time when they should be allocating all available resources to defending the Nation. So that is a second concern I have.

The last concern that I want to articulate in my opening statement is that as I understand the committee print, it essentially provides that sand and gravel operations or aggregate operations are brought into the coverage of the bill, in a way that S. 742 does not do, and could be phenomenally expensive in that that would require the testing, essentially, of every single load of rock or gravel which is mined, because of the potential for asbestos, simply in the

soil, which is scooped up by a sand and gravel operator and dumped into a dump truck, and as I understand the committee print, it would cause the seller of that aggregate, as he puts it into a dump truck, if that dump truck is going to sell it to me to put as my lawn as gravel, where we have gravel lawns to save water, to test every single load. I believe that that we need to be cautious here. Certainly, we want to take the steps necessary to protect human health, but I don't think we want to overreach in the drafting of that legislation or be overly broad, thus causing the legislation to be impractical.

With that, I yield back the balance of my time.

Mr. WYNN. I thank the gentleman for his opening statement. At this time, I am pleased to recognize the gentleman from Texas, Mr. Green.

OPENING STATEMENT OF HON. GENE GREEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. GREEN. Thank you, Mr. Chairman, for holding the hearing. This is an important issue to the health and safety of American consumers and workers. Today, men and women and children across the Nation are unknowingly exposed to asbestos through their work, home, or everyday consumer products. Widely used in commerce for its strength, flexibility and resistance to heat and corrosion, asbestos is found in over 3,000 products, including common items such as insulation, fabric, cement, and tiles. I represent the Port of Houston, and I have just dozens of seamen over the last 20 years who have been affected by asbestos exposure, and I have been to funerals where they have ultimately passed away from the process of inhaling that asbestos, the seamen who are working around the ships, and that is why I am glad this bill is before us.

The EPA estimates that 27 million Americans were exposed to occupational asbestos exposure that can lead to health effects between 1940 and 1980. Today, approximately 1.3 billion construction and general industry employees face considerable asbestos exposure at the workplace. Exposure to asbestos can cause a variety of illnesses, including mesothelioma, lung cancer, and fibrosis of the lungs. The long latency period for the diseases means it can take decades before symptoms surface, even as long as 40 years, and again, I could almost sign affidavits to show that affect. Protective standards have been adopted and tightened over the years, but human health risks remain. That is why I am pleased the subcommittee is considering a legislation that attempts to reduce the risk of asbestos exposure.

As said before, S. 742 had passed the Senate. The legislation has drawn bipartisan support and set a marker. The committee print adheres to the Senate bill with certain changes, including the scope of the prohibition, exempting certain caustics in aggregate products, and increasing criminal penalties for bill violations. This draft has potential to be an effective weapon in combating future asbestos exposure and health effects, and I look forward to the testimony, and I look forward, Mr. Chairman, for us moving the bill as expeditiously as possible. And I yield back my time.

Mr. WYNN. I thank the gentleman. At this time, the chair would recognize Mrs. Capps, the gentle lady from California.

OPENING STATEMENT OF HON. LOIS CAPPS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mrs. CAPPS. Thank you, Mr. Chairman. Thank you so much for holding this hearing. I am very much looking forward to hearing from our esteemed witnesses today.

This legislation is so critical, and it is so important that we move forward on it right now. We cannot afford to wait. We cannot, in good conscience, continue to sit idly by while countless numbers of unsuspecting men, women and children are exposed to this toxin, in their homes, in their workplaces, and in their schools. The potential consequences of these exposures are so severe.

Mesothelioma and other asbestos-related diseases continue to take a very serious toll on patients and their families. The latency period, as my colleague Mr. Green mentioned, for these diseases ensures that, unfortunately, we are going to continue to face many new cases in the years and decades to come, even should we completely ban asbestos. So we have to pass legislation that gives hope to those already suffering and exposed to asbestos, suffering from mesothelioma and these other dreaded asbestos-related diseases, while at the same time, we need to take aggressive steps to ban asbestos in order to protect future generations from exposure.

I am so pleased that you mentioned the area, Mr. Chairman, where a situation did occur, Libby, Montana. I grew up a few miles from there, and I know, personally, of the devastation that operation, located in the most pristine and beautiful wilderness area, what has happened there to all of the unsuspecting workers who went to work every day in that operation, and how for their families, it is a like plague that has visited generation after generation of those families. That place, alone, is worth of all of our efforts. Unfortunately, it isn't the only place that we are talking about.

And I am also very proud that the Mesothelioma Applied Research Foundation is headquartered in Santa Barbara, in my congressional district, in California. And I know, today, that we have several foundation board members with us, and in particular, I want to recognize Sue Vento, who is in the audience today. I am extremely grateful to have the opportunity to support legislation that honors Sue's husband, and our former colleague Bruce Vento. And I am pleased that we are joined by the person that has succeeded him in his congressional district, Betty McCollum, another esteemed colleague. Thank you, Sue, for all that you and the foundation have done and are continuing to do to help patients and their families and to raise the awareness to the public. So many people have no idea what we are even talking about.

And unfortunately, there is no cure for this terrible disease. Better diagnostic and treatment options for those who are afflicted will only be possible with enhanced Federal commitment to better research, and we need that as well. Over the past several years, the foundation has used private donations to fund research and to identify better treatments for mesothelioma. It is high time that the Federal Government do its part in expanding research on this deadly cancer.

I am committed to working with Chairman Wynn and Chairman Pallone to enact legislation this year that will ban asbestos and expand Federal research into mesothelioma and other asbestos-re-

lated diseases. I cannot emphasize enough how important it is to move quickly on this issue. We must make sure that that this is not the end of the road, today, for this crucial legislation, so I strongly urge this committee to pass legislation that steadfastly protects public health, while addressing the needs of current and future patients who are stricken and will be stricken—we know they will—with cancer and other conditions, because of previous and current exposure to asbestos.

Thank you, Mr. Chairman. I yield back

Mr. WYNN. I thank the gentle lady. At this time, the chair would recognize the distinguished vice chairwoman of the committee, the gentle lady, Ms. Solis from California.

OPENING STATEMENT OF HON. HILDA L. SOLIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. SOLIS. Thank you, Mr. Chairman, for having this hearing. It is a very important hearing today. I appreciate the testimony that we are going to hear from the witnesses, also.

The issue of asbestos and related asbestos diseases is a very important issue for all of us to address. Asbestos, as you know, causes significant health risks. Each year, about 10,000 people die as a result of occupational exposure, and tens of thousands of others suffer from lung conditions which make breathing so difficult, they can't even fully enjoy daily life. This is further complicated because symptoms may not show up for many years, until after. And I am concerned about the risk posed by workers, including the 1.3 million employees in the construction and general industries who face significant exposure on the job, and their families, who may be exposed to materials that are brought home, unintentionally.

In 1989, the EPA attempted to ban all uses of asbestos, for which there were readily available substitutes. The ban was supported by 10 years of hearings and over 100,000 cases of records, including several hundred scientific studies, but the Fifth Circuit Court struck down the ruling, citing concerns with provision in the Toxic Substances Control Act. In the 109th Congress, I authorized several amendments to fix the Toxic Substances Control Act, with regard to substances regulated through the Stockholm Convention. I recognize that if the EPA failed to regulate asbestos, then public health would continue to be at risk, but from asbestos and other known carcinogens. Unfortunately, these amendments were not fully considered, and asbestos and other known carcinogens are still threatening our workers and our families.

The committee print before us today is a necessary step towards achieving needed protections for our community, and I am pleased that it recognizes the risk of asbestos to public health by prohibiting the importation, the manufacture, processing or disturbing in commerce of asbestos products at a level protective to our public health. I am interested in the views of our witnesses today regarding the exemptions, exemptions including both Senate bill 742 and the committee print before us, and I am also interested in ensuring that any legislation we consider in this body is fully protective of the health of our workers and our families. I recognize the work done by our colleagues in the Senate to move Senate bill 742 for-

ward and look forward to working with them to resolve any of the differences before we send a bill to the President's desk.

As a member of the Health Subcommittee, I also hope that we can work together to develop Federal research assistance for asbestos and recognize the Senate efforts to include these provisions.

Again, Mr. Chairman, I thank you for having this very important hearing, and I look forward to hearing the testimony of our witnesses. I yield back the balance of my time.

Mr. WYNN. I thank the gentle lady for her statement. At this time, the chair would recognize the gentle lady from Wisconsin, Ms. Baldwin.

Ms. BALDWIN. Thank you, Mr. Chairman.

OPENING STATEMENT OF HON. TAMMY BALDWIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WISCONSIN

It is so important that we are shining a light on the harmful effects that asbestos-containing products can have on each and every one of our lives, and this hearing comes at a very critical time for millions of Americans who have been and are being exposed to asbestos in places where they live, work, or play, and many don't even know it. Thousands of people, every year, die from asbestos-related diseases-absolutely devastating those affected, including their families and their communities.

We are long overdue in our action to ban asbestos. Decades have passed since the EPA first issued its final rule prohibiting certain asbestos-containing products. Yet court orders, red tape, and agency inaction seems to have stalled any real progress in terms of banning the products that are making people sick. And once again, our Nation finds itself behind the pack in terms of addressing this issue. More than 40 countries, including all members of the European Union have banned the use of asbestos.

One of the real dangers with asbestos still being so prevalent today is that those people who have been or are being exposed may not show any signs of an illness until well into the future, and long after any prevention would have been helpful. And if we continue on this path without a comprehensive ban on the importation, manufacture, processing and distribution of asbestos, we are looking at decades, perhaps even generations more, of suffering from this devastating illness.

Finally, let me add that as we move forward on this issue and this bill, it is important that we take into consideration all aspects of controlling asbestos exposure, through awareness, education, prevention, and research. I recognize that the resource component, similar to that in the Senate bill, is not included in the committee print before us today; however, knowing that the research and treatment for asbestos-related diseases has been limited, I believe that we must consider authorizing Federal funding for research, and I would look forward to delving more deeply in this issue in the Health Subcommittee, on which I also sit, and also as this bill reaches the full Energy and Commerce Committee.

Again, thank you, Mr. Chairman, for holding this hearing today, and I look forward to hearing from our witness panels.

Mr. WYNN. Thank you for your opening statement. At this time, the chair would recognize the gentleman from Georgia, Mr. Barrow.

Mr. BARROW. I thank the chairman, and waive opening statement.

Mr. WYNN. The Chair would recognize the gentleman from New Jersey, Mr. Pallone.

OPENING STATEMENT OF HON. FRANK PALLONE JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Mr. Chairman, and I will be brief, but I just wanted to thank you for holding these critically important hearing, and I understand that the research component of this legislation is in the Health Subcommittee, so I just wanted to commit to you that we will work to enact Ms. McCollum's legislation in both subcommittee and that the bill that bans asbestos and protects people from harmful effects from asbestos exposure is obviously so important because we want to prevent future generations from being exposed to asbestos.

As we all know, the inhalation of asbestos fibers can cause serious illness. It is disturbing to me to think that there have been an estimated 27.5 million workers exposed to asbestos while on the job between 1940 and 1979. In 1989, the EPA issued a rule banning asbestos in any products that asbestos is deliberately added or which contains more than 1 percent by weight, but unfortunately, as you know, in 1991, an issue challenged the rule, and the EPA's ban was severely watered down. That is why I am glad that we are here to discuss this draft legislation that would ban asbestos in any product to which asbestos is deliberately added or used. It represents an incredibly strong standard and is an important step in protecting workers and everyday citizens from the ill effects of asbestos.

Since the World Health Organization, the EPA, and other health and safety organizations have not established a safe level for asbestos exposure, it is imperative that we have the strongest possible ban, and I believe this legislation is the vehicle that will provide that ban.

So I just want to thank you again, and I want to acknowledge the presence of Sue Vento in the hearing today. I, of course, had the privilege of serving with Congressman Bruce Vento before his untimely death in 2000, and in fact that she is carrying on with this, such an important bill, and a subject that impacted him. I really thank her for that. And thank you, Mr. Chairman.

Mr. WYNN. Thank you. I look forward to working with you, and I want to recognize the outstanding work you have done on a host of health issues, and I think we are going to be able to move this measure forward rapidly.

At this time, I would like to recognize one of our esteemed colleagues. She has been referenced earlier, Congresswoman Betty McCollum. She is not a member of the subcommittee, but with your indulgence, she is one of the distinguished sponsors of the House legislation to ban asbestos H.R. 3339, the Bruce Vento Ban Asbestos and Prevent Mesothelioma Act of 2007. I want to applaud her

leadership on this issue and her hard work, and certainly, we would like to hear comments that she might choose to make at this time.

OPENING STATEMENT OF HON. BETTY MCCOLLUM, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Ms. MCCOLLUM. Thank you, Mr. Chairman. I thank you so much for holding this hearing. Thank you, Ranking Member Shadegg, for your work on this important piece of legislation, and Mr. Pallone, for your commitment to hear the related issues in your committee.

I really thank everyone for being here to take the time to learn about this current situation, explore ideas and to come forward with solutions. I am proud to have introduced the Bruce Vento Ban Asbestos and Prevent Mesothelioma Act, H.R. 3339, the companion bill to Senate 742.

Congressman Vento was my predecessor and my dear friend, and I wish he was the one sitting here today. I want to thank Sue for her help and her support, and all of those who are here with her today, and those who can't be with her today, who have worked on this issue. They have been tireless advocates, and they have really represented well the families who live with this disease.

As it has been said, millions of Americans are exposed to asbestos every year, and it is long past time that we join the 40 other countries that have banned asbestos. The Senate has been working hard on this bill for years. It was finally able to pass it unanimously at the end of the year. Senator Murray and Senator Isakson deserve a great deal of thanks for all of their hard work and dedication on this issue. It is my sincere hope the House will also have the opportunity to pass a bill to ban asbestos.

Once again, I thank the chairman, the committee staff, and the full committee for taking up this important issue and allowing me a few minutes here today. I thank you, and I look forward to hearing how this is discharged later.

Mr. WYNN. Well, thank you very much. I also want to recognize Ms. Vento. I also, along with many people, served with your husband. He was a great man and a real credit to this House, and I think it is great that Ms. McCollum is recognizing his memory through this effort.

This will conclude the opening statements by members.

Other statements for the record as well as the text of the committee print will be placed in the record at this time.

[The prepared statement of Mr. Dingell and the committee print follows:]

Statement of Rep. John D. Dingell
Chairman
Committee on Energy and Commerce

For immediate release: February 28, 2008
Contact: Jodi Seth, Alex Haurek or Lauren Bloomberg, 202-225-5735

DINGELL ON S. 742 AND DRAFT LEGISLATION TO BAN ASBESTOS IN PRODUCTS

Washington, D.C. – Rep. John D. Dingell (D-MI), Chairman of the Committee on Energy and Commerce, inserted the following statement into the hearing record this afternoon at a Subcommittee on Environment and Hazardous Materials hearing entitled "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products."

"Mr. Chairman, today the Subcommittee meets to consider a very important public health issue involving legislation to ban or severely restrict the manufacture and distribution in commerce of asbestos-containing products. Imports of asbestos-containing products would also be prohibited. Many people may be surprised to learn that the use of asbestos, a "known human carcinogen" with no established safe threshold level for exposure, is not banned in the United States.

"The Centers for Disease Control and Prevention reports that more than 8,000 people in the U.S. died in 2004 from mesothelioma and asbestosis. This number does not include deaths from asbestos-related lung cancer. Worldwide, the World Health Organization estimates that 90,000 people die each year from asbestos-related lung cancer, mesothelioma, and asbestosis.

"Asbestos litigation has also been a real problem for many companies and industries. The American automotive industry has not manufactured vehicles with any parts containing asbestos for many years and has no intention of doing so in the future. Prohibiting the import of asbestos-containing parts from countries such as China will not only protect the health of American workers but also help reduce future potential liability and litigation costs for responsible companies. That can only be described as a win-win outcome.

"Mr. Chairman, I thank you for your leadership in holding this legislative hearing. I would also like to acknowledge the leadership of Senator Patty Murray, who has worked for many years to get asbestos out of products, and the leadership in the House of Representative McCollum, who has introduced legislation and met with me personally to urge action. I hope all members of the Subcommittee are willing to work together in a cooperative manner to protect our citizens from a contaminant that is known to cause cancer and thousands of deaths each year."

-30-

[COMMITTEE PRINT]

FEBRUARY 15, 2008

110TH CONGRESS
2D SESSION

H. R. _____

To amend the Toxic Substances Control Act to reduce the health risks posed by asbestos-containing products, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

M__. _____ introduced the following bill; which was referred to the Committee on _____

A BILL

To amend the Toxic Substances Control Act to reduce the health risks posed by asbestos-containing products, and for other purposes.

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

SECTION 1. SHORT TITLE.

This Act may be cited as the "Bruce Vento Ban Asbestos and Prevent Mesothelioma Act of 2008".

1 **SEC. 2. ASBESTOS-CONTAINING PRODUCTS.**

2 (a) IN GENERAL.—The Toxic Substances Control Act
3 (15 U.S.C. 2601 et seq.) is amended by adding at the end
4 the following:

5 "TITLE VI—ASBESTOS-
6 CONTAINING PRODUCTS

7 **"SEC. 601. DEFINITIONS.**

8 "In this title:

9 "(1) ASBESTOS.—The term 'asbestos' has the
10 meaning given that term in section 202(3).

11 "(2) ASBESTOS-CONTAINING PRODUCT.—The
12 term 'asbestos-containing product' means any prod-
13 uct (including any part) to which asbestos is delib-
14 erately added, or used, or in which asbestos is other-
15 wise present in any concentration.

16 "(3) DISTRIBUTE IN COMMERCE.—

17 "(A) IN GENERAL.—The term 'distribute
18 in commerce' has the meaning given the term
19 in section 3.

20 "(B) EXCLUSIONS.—The term 'distribute
21 in commerce' does not include—

22 "(i) the sale, introduction or delivery
23 for introduction into commerce, or holding
24 of an asbestos-containing product, or an
25 interest in real property (and improve-

1 ments thereon), by a person that is an end
2 user;
3 "(ii) the sale, introduction or delivery
4 for introduction into commerce, or holding
5 of an asbestos-containing product by a per-
6 son solely for the purpose of disposal of
7 the asbestos-containing product in compli-
8 ance with applicable Federal, State, and
9 local requirements; or
10 "(iii) the sale, introduction or delivery
11 for introduction into commerce, or holding
12 of a motor vehicle that was manufactured
13 and sold before the date of enactment of
14 this title and that has an asbestos-con-
15 taining product installed in or on the
16 motor vehicle.
17 "(4) MOTOR VEHICLE.—The term 'motor vehi-
18 cle' has the meaning given that term in section
19 30102(a)(6) of title 49, United States Code.
20 "(5) PERSON.—The term 'person' means—
21 "(A) any individual;
22 "(B) any trust, corporation (including a
23 government corporation), company, association,
24 firm, partnership, joint venture, sole proprietor-
25 ship, or other for-profit or nonprofit business

1 entity (including any manufacturer, importer,
2 distributor, or processor);
3 "(C) any Federal, State, or local depart-
4 ment, agency, or instrumentality; and
5 "(D) any interstate body.
6 **"SEC. 602. PUBLIC EDUCATION PROGRAM.**
7 "(a) IN GENERAL.—Not later than 1 year after the
8 date of enactment of this title, the Administrator, in con-
9 sultation with the Chairman of the Consumer Product
10 Safety Commission, the Director of the Centers for Dis-
11 ease Control and Prevention, the Secretary of Labor, and
12 other appropriate Federal agencies, shall establish a plan
13 and initiate a program—
14 "(1) to increase awareness of the dangers posed
15 by—
16 "(A) asbestos-containing products in
17 homes and workplaces; and
18 "(B) asbestos-related diseases;
19 "(2) to provide current and comprehensive in-
20 formation to asbestos-related disease patients, family
21 members of patients, and front-line health care pro-
22 viders on—
23 "(A) the dangers of asbestos exposure;
24 "(B) asbestos-related labeling information;
25 "(C) health effects of exposure to asbestos;

1 "(D) symptoms of asbestos exposure; and
2 "(E) available and developing treatments
3 for asbestos-related diseases, including clinical
4 trials;
5 "(3) to encourage asbestos-related disease pa-
6 tients, family members of patients, and front-line
7 health care providers to participate in research and
8 treatment endeavors relating to asbestos; and
9 "(4) to encourage health care providers and re-
10 searchers to provide to asbestos-related disease pa-
11 tients and family members of patients information
12 relating to research, diagnostic, and clinical treat-
13 ments relating to asbestos.
14 "(b) GREATEST RISKS.—In establishing the pro-
15 gram, the Administrator shall give priority to asbestos-
16 containing products used by consumers and workers that
17 present or will present the greatest risk of injury to human
18 health.
19 "(c) AUTHORIZATION OF APPROPRIATIONS.—There
20 are authorized to be appropriated such sums as are nec-
21 essary to carry out this section.
22 **"SEC. 603. PROHIBITION ON ASBESTOS-CONTAINING PROD-**
23 **UCTS.**
24 "(a) PROHIBITION.—

1 "(1) IN GENERAL.—Subject to subsection (b),
2 no person shall import, manufacture, process, or dis-
3 tribute in commerce asbestos-containing products.
4 "(2) EFFECTIVE DATE.—The prohibition under
5 paragraph (1) shall take effect 2 years after the date
6 of enactment of this title.
7 "(b) EXEMPTIONS.—
8 "(1) IN GENERAL.—Any person may petition
9 the Administrator for an exemption from the re-
10 quirements of subsection (a), and the Administrator
11 may grant, by rule, such an exemption if the Admin-
12 istrator determines that—
13 "(A) the exemption would not result in an
14 unreasonable risk of injury to health or the en-
15 vironment; and
16 "(B) there is no alternative to the asbes-
17 tos-containing product that is the subject of the
18 petition.
19 "(2) TERMS AND CONDITIONS.—An exemption
20 granted under this subsection shall be in effect for
21 such period (not to exceed a total of 3 years) and
22 subject to such terms and conditions as the Admini-
23 strator may prescribe.
24 "(3) GOVERNMENTAL USE.—

1 "(A) IN GENERAL.—An exemption from
2 the requirements of subsection (a) shall apply,
3 only to the extent necessary for the critical
4 functions described in a certification provided
5 under clause (i) or (ii), if the exemption is—
6 "(i) sought by the Secretary of De-
7 fense and the Secretary certifies, and pro-
8 vides a copy of that certification to the Ad-
9 ministrator and Congress, that—
10 "(I) use of the asbestos-con-
11 taining product is necessary to the
12 critical functions of the Department
13 of Defense;
14 "(II) no reasonable alternatives
15 to the asbestos-containing product
16 exist for the intended purpose;
17 "(III) use of the asbestos-con-
18 taining product will not result in an
19 unreasonable risk of injury to health
20 or the environment; and
21 "(IV) the use of the product is in
22 compliance with all Federal laws and
23 regulations; or
24 "(ii) sought by the Administrator of
25 the National Aeronautics and Space Ad-

1 ministration and the Administrator of the
2 National Aeronautics and Space Adminis-
3 tration certifies, and provides a copy of
4 that certification to Congress, that—
5 "(I) the asbestos-containing
6 product is necessary to the critical
7 functions of the National Aeronautics
8 and Space Administration;
9 "(II) no reasonable alternatives
10 to the asbestos-containing product
11 exist for the intended purpose;
12 "(III) the use of the asbestos-
13 containing product will not result in
14 an unreasonable risk of injury to
15 health or the environment; and
16 "(IV) the use of the product is in
17 compliance with all Federal laws and
18 regulations.
19 "(B) CONTENTS.—A certification required
20 under subparagraph (A) shall include a descrip-
21 tion of the critical functions, and shall identify
22 any authorized manufacturer, importer,
23 distributer, or contract-authorized user of the
24 exemption on behalf of the Department of De-

1 fense or the National Aeronautics and Space
2 Administration.
3 "(C) LIMITATION.—A certification under
4 this paragraph shall not be effective for more
5 than 5 years, unless the Secretary of Defense
6 or the Administrator of the National Aero-
7 nautics and Space Administration recertifies
8 within 5 years after a prior certification.
9 "(4) DIAPHRAGMS FOR EXISTING CHLOR-AL-
10 KALI ELECTROLYSIS INSTALLATIONS.—
11 "(A) IN GENERAL.—The requirements of
12 subsection (a) shall not apply to any chlor-alkali
13 electrolysis installation in existence and using
14 asbestos diaphragms as of the date of enact-
15 ment of this title, or to caustic soda produced
16 at such an installation that contains asbestos in
17 an amount less than .01 percent.
18 "(B) REVIEW.—
19 "(i) IN GENERAL.—Not later than 3
20 years after the date of enactment of this
21 title, and every 6 years thereafter, the Ad-
22 ministrator shall review the exemption pro-
23 vided under subparagraph (A) to deter-
24 mine the appropriateness of the exemption.

1 "(ii) SCOPE.—In conducting the re-
2 view of the exemption provided under sub-
3 paragraph (A), the Administrator shall ex-
4 amine whether the chlor-alkali electrolysis
5 installation presents or will present an un-
6 reasonable risk of injury to health or the
7 environment, including the risk of injury to
8 an individual relating to the operation by
9 the individual of each chlor-alkali elec-
10 trolysis installation described in subpara-
11 graph (A).
12 "(iii) PUBLIC PARTICIPATION.—In
13 conducting the review of the exemption
14 provided under subparagraph (A), the Ad-
15 ministrator shall provide public notice and
16 a 30-day period of public comment.
17 "(C) DECISION RELATING TO EXTENSION
18 OF EXEMPTION.—Upon completion of a review
19 of an chlor-alkali electrolysis installation under
20 subparagraph (B)(i), if the Administrator de-
21 termines that the chlor-alkali electrolysis instal-
22 lation presents or will present an unreasonable
23 risk of injury to health or the environment, the
24 Administrator may terminate the exemption

1 provided to the electrolysis installation under
2 subparagraph (A).
3 "(5) AGGREGATE PRODUCTS.—
4 "(A) IN GENERAL.—Subsection (a)(1)
5 shall not apply to aggregate products (extracted
6 from stone, sand, or gravel operations) that—
7 "(i) are imported, manufactured,
8 processed, or distributed in commerce for
9 the uses described in subparagraph (D) of
10 this paragraph; and
11 "(ii) have been tested using a test
12 method established under subparagraph
13 (B) and determined to have an asbestos
14 content that is less than—
15 "(I) 0.25 percent; or
16 "(II) if a lower asbestos content
17 level has been established by the Ad-
18 ministrator under subparagraph (C),
19 such level.
20 "(B) ASBESTOS TEST METHOD.—(i) Not
21 later than 1 year after the date of enactment of
22 this title, the Administrator shall issue guidance
23 establishing the test method for purposes of
24 compliance with this paragraph. In developing

1 the test method under this clause, the Adminis-
2 trator shall evaluate and take into account—
3 "(I) the most accurate and precise
4 test methods for sampling and analysis of
5 asbestos-containing aggregate products;
6 "(II) actual and potential human ex-
7 posures to asbestos-containing aggregate
8 products; and
9 "(III) activity-based monitoring of as-
10 bestos-containing aggregate products.
11 "(ii) Not later than 3 years after the date
12 of enactment of this title, the Administrator
13 shall promulgate final regulations establishing
14 the test method for purposes of compliance with
15 this paragraph. In establishing the test method
16 under this clause, the Administrator shall evalu-
17 ate and take into account the factors described
18 in clause (i)(I) through (III).
19 "(C) REVIEW AND REVISION OF CONTENT
20 LEVEL.— Not later than 3 years after the date
21 of enactment of this title, and at least every 3
22 years thereafter, the Administrator shall review
23 the currently effective asbestos content level
24 under subparagraph (A)(i) or (ii) and deter-
25 mine whether the level is protective of human

1 health and the environment. If the Adminis-
2 trator determines that the asbestos content level
3 is not protective of human health and the envi-
4 ronment, the Administrator shall promulgate
5 regulations establishing a lower asbestos con-
6 tent level within 3 years of the Administrator's
7 determination.
8 "(D) USES FOR EXEMPTED AGGREGATE
9 PRODUCTS.—Aggregate products are exempted
10 under subparagraph (A) only to the extent that
11 they are imported, manufactured, processed, or
12 distributed in commerce for use—
13 "(i) as an integral part of asphalt
14 concrete;
15 "(ii) as an integral part of Portland
16 cement concrete; or
17 "(iii) as an integral part of other
18 similarly cemented materials.
19 "(E) RECEIPT TO RECIPIENT.—Any per-
20 son who imports, manufactures, processes, or
21 distributes in commerce aggregate products ex-
22 empted pursuant to this paragraph shall pro-
23 vide to each recipient of such products a written
24 receipt that includes the following information:

1 "(i) The amount of such products
2 provided to the recipient.
3 "(ii) The date the products were pro-
4 vided to the recipient.
5 "(iii) A certification that the products
6 have been tested pursuant to this para-
7 graph and determined to have an asbestos
8 content of less than the currently effective
9 asbestos content level under subparagraph
10 (A)(i) or (ii).
11 "(c) DISPOSAL.—
12 "(1) IN GENERAL.—Except as provided in para-
13 graph (2), not later than 3 years after the date of
14 enactment of this title, each person that possesses
15 an asbestos-containing product that is subject to the
16 prohibition established under this section shall dis-
17 pose of the asbestos-containing product, by a means
18 that is in compliance with applicable Federal, State,
19 and local requirements.
20 "(2) EXEMPTION.—Nothing in paragraph (1)
21 requires that an asbestos-containing product be re-
22 moved or replaced.
23 "(d) COMPLIANCE TESTING.—
24 "(1) IN GENERAL.—In accordance with para-
25 graph (2), not later than 1 year after the date on

1 which the prohibition takes effect under subsection
2 (a), and annually thereafter, to ensure compliance
3 with this section, the Administrator shall carry out
4 tests on an appropriate quantity of products, as de-
5 termined by the Administrator, to determine if the
6 products are asbestos-containing products.

7 "(2) APPROPRIATE TEST METHODOLOGIES.—In
8 carrying out the compliance testing under paragraph
9 (1), the Administrator shall use the appropriate test
10 methodology for each product that is the subject of
11 the compliance testing.

12 "(3) ANNUAL REPORT.—

13 "(A) IN GENERAL.—Upon completion of
14 each annual testing period described in para-
15 graph (1), the Administrator shall prepare a re-
16 port for the annual testing period covered by
17 the report, describing those products that are
18 asbestos-containing products.

19 "(B) PUBLIC AVAILABILITY.—Not later
20 than 90 days after the date of completion of
21 each annual testing period described in para-
22 graph (1), the Administrator shall make the re-
23 port for the annual testing period covered by
24 the report available to the public.

1 "(e) SAVINGS CLAUSE.—Except as specifically pro-
2 vided in this title, nothing in this title shall be construed
3 to override, change, or otherwise affect the obligations of
4 any person, including a Federal agency, to comply with
5 the regulations contained in part 763 of title 40 of the
6 Code of Federal Regulations.

7 **"SEC. 604. CRIMINAL PENALTY.**

8 "Notwithstanding section 16(b), any person who
9 knowingly or willfully violates any provision of this title
10 shall, in addition to or in lieu of any civil penalty which
11 may be imposed under section 16(a) for such violation,
12 be subject, upon conviction, to a fine of not more than
13 $25,000 for each day of violation, or to imprisonment for
14 not more than 5 years, or both.

15 **"SEC. 605. CITIZEN PETITIONS.**

16 "(a) IN GENERAL.—Any person may petition the Ad-
17 ministrator to initiate a proceeding for the issuance,
18 amendment, or repeal of a regulation or order under this
19 title.

20 "(b) FILING AND CONTACT.—Such petition shall be
21 filed in the principal office of the Administrator and shall
22 set forth the facts which it is claimed establish that it is
23 necessary to issue, amend, or repeal a regulation or order
24 under this title.

1 "(c) HEARING OR INVESTIGATION.—The Adminis-
2 trator may hold a public hearing or may conduct such in-
3 vestigation or proceeding as the Administrator deems ap-
4 propriate in order to determine whether or not such peti-
5 tion should be granted.

6 "(d) GRANTING OR DENIAL.—Within 90 days after
7 filing of a petition described in subsection (a), the Admin-
8 istrator shall either grant or deny the petition. If the Ad-
9 ministrator grants such petition, the Administrator shall
10 promptly commence an appropriate proceeding in accord-
11 ance with this title. If the Administrator denies such peti-
12 tion, the Administrator shall publish in the Federal Reg-
13 ister the Administrator's reasons for such denial. The
14 granting or denial of a petition under this subsection shall
15 not affect any deadline or other requirement of this title.

16 **"SEC. 606. STATE AND FEDERAL LAW.**

17 "(a) NO PREEMPTION.—Nothing in this title shall be
18 construed, interpreted, or applied to—

19 "(1) preempt, displace, or supplant any other
20 State or Federal law, whether statutory or common;
21 or

22 "(2) prohibit the importation, manufacture,
23 processing, or distribution in commerce of drinking
24 water in a manner that complies with the require-

1 ments of the Safe Drinking Water Act (42 U.S.C.
2 300f et seq.) and regulations issued under that Act.
3 "(b) NO FEDERAL CAUSE OF ACTION.—Nothing in
4 this title creates a cause of action, or in any other way
5 increases or diminishes the liability of any person, under
6 any other law.
7 "(c) INTENT OF CONGRESS.—It is not the intent of
8 Congress that this title or rules, regulations, or orders
9 issued pursuant to this title be interpreted as influencing,
10 in either the plaintiff's or defendant's favor, the disposi-
11 tion of any civil action for damages relating to asbestos.
12 This subsection does not affect the authority of any court
13 to make a determination in an adjudicatory proceeding
14 under applicable State law with respect to the admission
15 into evidence or any other use of this title or rules, regula-
16 tions, or orders issued pursuant to this title.".
17 (b) DEFINITION AMENDMENTS.—Section 202(3) of
18 such Act (15 U.S.C. 2642(3)) is amended—
19 (1) in each of subparagraphs (A) through (D),
20 by striking the commas at the end of the subpara-
21 graphs and inserting semicolons;
22 (2) in subparagraph (E), by striking ", or" and
23 inserting a semicolon;
24 (3) in subparagraph (F), by striking the period
25 at the end and inserting a semicolon; and

1 (4) by adding at the end the following:

2 "(G) any material formerly classified as

3 tremolite, including—

4 "(i) winchite asbestos; and

5 "(ii) richterite asbestos; and

6 "(H) any asbestiform amphibole mineral.".

7 (c) CONFORMING AMENDMENTS.—(1) The table of

8 contents in sections 1 of the Toxic Substances Control Act

9 (15 U.S.C. prec. 2601) is amended by adding at the end

10 the following:

"TITLE VI—ASBESTOS-CONTAINING PRODUCTS

"Sec. 601. Definitions.
"Sec. 602. Public education program.
"Sec. 603. Prohibition on asbestos-containing products.
"Sec. 604. Criminal penalty.
"Sec. 605. Citizen petitions.
"Sec. 606. State and Federal law.".

11 (2) Section 7(a) of such Act (15 U.S.C. 2606(a)) is

12 amended by inserting "or title VI" after "or title IV" both

13 places it appears.

14 (3) Section 11(a) and (b) of such Act (15 U.S.C.

15 2610(a) and (b)) are amended by inserting "or title VI"

16 after "to title IV" both places it appears.

17 (4) Section 13(a)(1)(B) of such Act (15 U.S.C.

18 2612(a)(1)(B)) is amended by inserting "or title VI" after

19 "or title IV" each place it appears.

20 (5) Section 15(1) of such Act (15 U.S.C. 2614(1))

21 is amended by inserting "or title VI" after "title II" both

22 places it appears.

1 (6) Section 15(2) of such Act (15 U.S.C. 2614(2))
2 is amended—
3 (A) by inserting "or title VI" after "section 5
4 or 6" both places it appears; and
5 (B) by inserting "or title VI" after "section 5
6 or 7".
7 (7) Section 17(a)(1)(B) of such Act (15 U.S.C.
8 2616(a)(1)(B)) is amended by inserting "or title VI" after
9 "or title IV" both places it appears.
10 (8) Section 17(b) of such Act (15 U.S.C. 2616(b))
11 is amended by inserting "or title VI" after "to title IV".
12 (9) Section 19(a)(1)(A) of such Act (15 U.S.C.
13 2618(a)(1)(A)) is amended by striking "title II or IV" and
14 inserting "title II, IV, or VI".
15 (10) Section 19(a)(3)(B) of such Act (15 U.S.C.
16 2618(a)(3)(B)) is amended by inserting "or title VI" after
17 "under title IV".
18 (11) Section 20(a)(1) of such Act (15 U.S.C.
19 2619(a)(1)) is amended by striking "title II or IV" both
20 places it appears and inserting "title II, IV, or VI".

Mr. WYNN. At this time, we will turn to our first witness panel. It is a single witness. I am very pleased to welcome Mr. James Gulliford, Assistant Administrator at the Office of Prevention Pesticides and Toxic Substances with the U.S. Environmental Protection Agency. We will have a 5-minute opening statement from Mr. Gulliford, the prepared testimony submitted in advance of the hearing will also be made part of the hearing record.

Mr. Gulliford?

STATEMENT OF JAMES B. GULLIFORD, ASSISTANT ADMINISTRATOR, OFFICE OF PREVENTION, PESTICIDES, AND TOXIC SUBSTANCES, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. GULLIFORD. Thank you. Good afternoon, Chairman Wynn, Ranking Member Shadegg, and member of the subcommittee. Thank you for the opportunity to talk with you today, and I ask that my entire written testimony be included as part of the record.

I am here today to discuss EPA's efforts of asbestos control under the Toxic Substances Control Act and to share information on legislation that is pending with the subcommittee to ban asbestos. EPA believes a legislative approach to address this issue may be an effective away of further reducing the risks from asbestos, providing it is carefully crafted and effectively focuses on risk reduction. And as demonstrated through previous meetings with your committee staff prior to this hearing, we stand ready to continue to work with your committee.

We all agree that exposure to asbestos remains a public health concern due to its continued use and presence in building and products. While the disease rate may slow over time as use declines, given the severity and negative outcomes associated with asbestos-related diseases, actions to address the remaining uses are important to further reduce disease. For decades, a number of Federal agencies have regulated asbestos-containing products, wastes and releases, and this work has reduced exposures. In 1989, as has been pointed out, EPA promulgated final regulations under section 6 of TSCA to ban and phase out asbestos in most products. However, in 1991, the U.S. Court of Appeals for the Fifth Circuit overturned portions of the asbestos-product ban.

Following the court decision, only a few asbestos uses remained banned, along with new uses of asbestos. Nonetheless, EPA continued its work to reduce asbestos exposure and risks in other priority areas. For example, in building asbestos removal is not usually necessary, unless the material is damaged or disturbed through demolition or renovation activities. So our focus is on preventing exposure by teaching people to recognize asbestos-containing materials, to monitor them, and effectively manage them in place. EPA also regulates the release of asbestos from factories and during building demolition or renovation under the Clean Air Act.

In a number of sites across the country where environmental releases or threatened releases can harm public health or the environment, EPA also performs asbestos cleanups under the Superfund program. As has been pointed out, one of the largest asbestos-remediation efforts is the asbestos-contamination problem at the Libby, Montana Superfund site. EPA has been working closely with

the community in Libby to clean up contamination and reduce risks to human health.

On science, many questions remain about asbestos, including areas such as toxicology, epidemiology and exposure assessment. EPA has a number of ongoing activities to address these various uncertainties, including research to address data gaps on health effects as well as assessing risks from exposure to asbestos and related materials.

After preliminary review, we do have concerns with some of the provisions in the draft bill, such as the provision to regulate aggregate and the compliance-testing requirement, and we may have additional concerns as the administration completes its review. However, EPA believes that asbestos does not belong in products and safer and equally efficacious and cost-effective substitutes exists. And EPA appreciates the opportunity to continue to provide technical assistance to the committee, and we will also continue to review the draft bill.

So thank you for invitation to appear today before the subcommittee, and I will be pleased to answer any questions.

Mr. WYNN. Thank you very much for your testimony. Let me recognize myself for questions at this time, and indicate that I appreciate the technical assistance that you and the EPA staff have provided to our subcommittee.

The first question I want to ask you, though, is do you agree that the 1 percent threshold or cut-off level for regulation in the Toxic Substances Control Act that was used by the Senate as the standard for the prohibition in S. 742 was established on the basis of analytical capability in 1973 and does not reflect current science?

Mr. GULLIFORD. Thank you, Congressman Wynn. The 1 percent standard was established in the AHERA statute, and it is, as you said, established at the time primarily on the basis of our analytical ability to detect asbestos and asbestos fibers. The 1 percent standard is not a risk-based health standard, so I would agree exactly with what you said.

Mr. WYNN. Thank you. That is a very important point that it is not risk based or health based.

The second question I wanted to ask is that almost all of the EPA technical assistance suggested changes to S. 742, were incorporated in the committee print. I would like highlight a couple of EPA suggestions. Would you agree that to protect public health and the environment from asbestos hazards and to improve the effectiveness of the legislation, the ban should target any products in which asbestos is intentionally added or present as a contaminate?

Mr. GULLIFORD. Yes, we do agree with that. That was part of our technical assistance and our discussions with committee staff because we know for a fact, and particularly we learned it in the Libby situation, that soil and debris that does contain less than 1 percent of asbestos can release unacceptable air concentrations of these types of asbestos. So it is important, and we have no standard, we have no threshold under which we believe that there is no threat or danger from an asbestos exposure.

Mr. WYNN. Thank you. At this time, I would like to ask unanimous consent that EPA's technical assistance comments on S. 742,

dated November 2, 2007, be put into the record. Without objection, so ordered.

The next question I wanted to ask you is whether it is true that EPA is not aware of any commercial uses of asbestos other than diaphragms for existing chlor-alkali electrolysis installations which do not have non-asbestos alternatives?

Mr. GULLIFORD. We think that the opportunity that the bill allows for exemptions to be established is an important one because there may be uses for asbestos that are appropriate. There may be ways, for example, as you mentioned in the chol-ralkali facilities where the exposure in the use of asbestos can be mitigated and protected in such a way that there is virtually little risk to human health or the environment. So we do agree with the process to examine exemptions, but we do believe that it should be a very tight exception and that clearly, we should proceed, again, with respect to a ban, to those questions where are there are alternative for use, they are equally efficacious, they are cost effective, and again, are more protective of human health and the environment.

Mr. WYNN. I think what I am trying to get at is are you aware of any situations other than chloroalkali electrolyses installations where there are not non-asbestos alternatives? And obviously, that could change, but based on what you know today?

Mr. GULLIFORD. We know that, clearly, there are uses in effect that we would not ask that they be removed, for example, asbestos in place in cars and in homes, so the fact that we have restricted those from the requirements that they be banned will allow continued commerce in that if a person has a home with asbestos products in it, that homes can continue to be sold without removing those, again, if they are safe it the situation that they are used.

Mr. WYNN. But what I am trying to get, and I don't want to belabor this, but the existence of alternatives is fairly widespread. Are you aware of any situations where there are not alternatives, other than the one that I referenced at the beginning of my question?

Mr. GULLIFORD. I agree that for most uses, we believe that there alternative that are commercially available, and I, myself, am not aware off the top of my head of other existing uses for which there are no alternative, but as you indicated, I will not rule that out.

Mr. WYNN. OK, thank you very much for your testimony and answering the questions I just raise. At this time, I would defer to my colleague, Mr. Shadegg.

Mr. SHADEGG. Thank you, Mr. Chairman, and thank you, Mr. Gulliford. I appreciate your work on this issue.

You indicated that a portion of the standard, which is written in the committee mark, which talks about asbestos which is deliberately added, and as I understand it, you testified that the 1 percent standard is not a risk-based standard. It was based on ability to detect at the time. Is that correct?

Mr. GULLIFORD. Yes, it is.

Mr. SHADEGG. You heard my opening statement in which I expressed concern that the former definition of asbestos-containing products in the committee mark, which says "otherwise present in any concentration" sets a zero standard, does it not?

Mr. GULLIFORD. It could be interpreted that way, yes.

Mr. SHADEGG. Is there a grant of authority to EPA to adopt any standard other than a zero standard under that language, "any concentration?"

Mr. GULLIFORD. Yes, virtually all of our standards are based on risk, so zero-based standards are not a necessary standard for EPA to go to.

Mr. SHADEGG. But there is no mention of risk in this language.

Mr. GULLIFORD. As we provided input on that issue, we did not mean for it, for example, as you indicated in your opening remarks, to apply to a fiber that may fall on a piece of tape in manufacture. But I think it is very important that we recognize that we don't have a risk-based standard that says that there is an acceptable level of asbestos.

Mr. SHADEGG. So right now, if you set any standard above zero, if you set a standard that would tolerate an ambient piece of asbestos dropping on a piece of scotch tape, since it says any, you could be sued for any standard other than zero, correct? Or is there risk language that I don't see in the bill?

Mr. GULLIFORD. I am not sure that I understand your question. It is not our intent that this definition would apply to the example that you gave.

Mr. SHADEGG. It is very interesting in this hearing room, but it is not going to be very interesting to a court. I mean what I am concerned about is the court is going to say in in any concentration means just exactly what it says in plain English. Now, I know judges like not to read plain English, but I read that as creating a huge issue.

Let me ask another question. You said that the 1 percent standard was a statutory standard. It was set in the statute.

Mr. GULLIFORD. Right.

Mr. SHADEGG. The committee mark sets a statutory standard. It does not leave it to the discretion of the agency. Have you not found over the years that it is better to give the agency discretion to set the standard, for example, based on risk, rather than have the Congress set the standard? I mean, isn't that what you are telling us is the problem with the 1 percent standard?

Mr. GULLIFORD. I think what I would try communicate in that is in this case, asbestos, much like products like PCBs were in the TSCA original legislation, there are products such as that where a mandatory ban is a very effective way to deal with products, again, that we don't believe there is an appropriate place for, products that contain asbestos in the marketplace, again, unless there is——

Mr. SHADEGG. So is EPA saying it wants a zero-tolerance standard? None? Zero?

Mr. GULLIFORD. I still stand by the definition that we gave, but we did not offer that language, again, with the intent that it be exclusively a——

Mr. SHADEGG. So the any concentration is yours. You want it to mean zero?

Mr. GULLIFORD. Again, the reason I am saying that, as I stated before, is because we do not have a risk-based standard with respect to asbestos to suggest at some certain level of asbestos exposure it is safe.

Mr. SHADEGG. OK, I need to move onto other issues for time reasons. Have you looked at the exemption this legislation provides for sand and gravel operations, and would you agree it provides that? Sand and gravel operations or aggregate operations can get an exemption if they certify that the load tested is below 25 percent for each load and that they then report that to the purchaser of the load?

Mr. GULLIFORD. We have concern for the way that this language has appeared, again, in the committee print, and we have not had an opportunity to discuss that with the sand and gravel people, so we have——

Mr. SHADEGG. So you are open to discussing those issues. Are you also open to discussing my concern about the "any concentration" language?

Mr. GULLIFORD. Yes, I am.

Mr. SHADEGG. OK, great. Last issue: the words "citizens" do not appear in the bill, but they are otherwise in TSCA. Do you agree with me that under the way the committee print is written, a citizen suit may be brought against the Defense Department under this legislation, is that correct?

Mr. GULLIFORD. I have not have an opportunity to discuss, again, the committee print with the Department of Defense. We do, absolutely, agree with that. There are defense-related needs for asbestos and asbestos-containing products.

Mr. SHADEGG. You wouldn't advocate citizen suits against the Defense Department, would you?

Mr. GULLIFORD. I would not. And we, also, though would defer to the Department of Defense, and NASA, for example, for their space applications as well, their judgment in the importance of those exemptions.

Mr. SHADEGG. Do you know if the Defense Department has taken a position on the committee mark?

Mr. GULLIFORD. I do not know.

Mr. SHADEGG. Thank you. Thank you, Mr. Chairman.

Mr. WYNN. Thank you, and the gentleman from Georgia, Mr. Barrow, for questions.

Mr. BARROW. Thank you, Mr. Chairman. I won't be long. I just have a couple of questions.

Mr. Gulliford, in between the Senate version, which has a 1 percent by weight standard, and the House committee print, which has issues which have been raised by Mr. Shadegg and others, how does the standard vary in the 40-or-so countries that have a ban? A ban can mean more than one thing, obviously, and I read in the materials, for example, that Japan has a 0.1 of 1 percent standard. Do you have any ideas of how the bans and the various degrees of bands tend to vary in terms of the scope of the prohibition?

Mr. GULLIFORD. I do not know the answer to that. I don't know the basis for any standard that has been set internationally or by individual countries internationally, nor do I know the basis for the actions that the EU took, for example.

Mr. BARROW. I can see the commonsense of not trying to eliminate from products that are in the air we breathe the ground we walk on at the same time. I can see that you want to avoid a loophole that is going to create an opportunity for any exposure that

is greater than necessary and that not have any appreciable benefit to go along with the cost or risk to go along with it. I am just wondering what other countries are using as benchmarks in defining their band for this. I haven't seen anything that looks quite like the committee print in anything that has been referred to in other countries, but it may be they have a similar comprehensive or far-reaching, but more commonsense interpretation of how it applies. Can you guide us in that? Can you give us any insight in to that?

Mr. GULLIFORD. We would be happy to look into that and report back to the committee.

[The prepared statement of Mr. Gulliford appears at the conclusion of the hearing.]

Mr. BARROW. I thank you, Mr. Chairman. That is all I have.

Mr. WYNN. I thank the gentleman for his questions. It was certainly on point. I believe that concludes all of the questions for this panel, and I want to thank you for your testimony.

At this time, I would like to welcome our second panel. Gentlemen, thank you very much for coming. Before us today, I would like to introduce, first all of the panelists. We have with us Dr. Aubrey Miller, Senior Medical Officer and Toxicologist at the U.S. Environmental Protection Agency in Region 8. Next, we have Christopher Weis, Senior Toxicologist, U.S. Environmental Protection Agency, NEIC. And third, we have Mr. Gregory Meeker, a geologist at U.S. Geological Survey. I would like to clarify that only Mr. Meeker will be making an opening statement. However, the other panelists will be available to answer questions at the appropriate time. At this point, I would like to recognize Mr. Meeker for his testimony. Again, thank you for being here.

STATEMENT OF GREGORY P. MEEKER, GEOLOGIST, U.S. GEOLOGICAL SURVEY, DENVER MICROBEAM LABORATORY, MS–973

Mr. MEEKER. Thank you, Mr. Chairman, and members of the subcommittee, thank you for the opportunity to present testimony on the mineralogy and geology of asbestos. My name is Greg Meeker, and I am a geologist at the U.S. Geological Survey.

Asbestos is a term applied to a special group of minerals that form as long, very thin fibers that usually occur in bundles. When handled or crushed, the bundles readily separate into individual fibers. This type of mineral growth is called asbestiform. The definition for asbestos is based on the proprieties that make it valuable as a commodity. Although there are many asbestos minerals, some commercial and regulatory definitions of asbestos focus of chrysotile and several members of the amphibole mineral group, including the asbestiform varieties of the minerals riebeckite, grunerite, anthophyllite, actinole and tremolite. Other amphiboles are known to occur in the fibrous and asbestiform habit, but have not been utilized commercially. These include the minerals winchite and richterite.

The academic mineralogy community has long classified minerals by name. This mineral nomenclature has evolved dramatically over the years and continues to evolve. The current academic nomenclature for amphiboles is endorsed by the International Mineralogical Association. The Libby, Montana amphibole provides an ex-

cellent example of the difficulties that have arisen from commingling of different amphibole nomenclatures. During the years that the Libby mine was active, geologist, miners and regulators called the Libby amphibole tremolite, soda tremolite, sodium-rich tremolite and in one case richterite. Beginning in 2000, mineralogists began to reinvestigate the Libby amphibole and apply the current academic nomenclature, identifying it as winchite, richterite and tremolite. These findings have generated confusion in the asbestos community regarding the identification of Libby amphibole and whether or not the material is regulated. However, there is no indication that the regulators intended different treatment for what remained the same underlying substance during this time period. In this example, the International Mineralogical Association, inadvertently redefined the regulated material for reasons totally unrelated to asbestos regulation.

Historically, most commercial asbestos used in products has been chrysotile. Chrysotile tends to have very thin fibers that are often very long and flexible. Amphibole asbestos fibers, however, can display a large range of shapes and vary from thin to thick, relatively short, and brittle. Other particle types are often referred to by mineralogists as fibrous, acicular, and prismatic. There is currently considerable disagreement in the asbestos community about how to distinguish these particle types in a mixed sample and more importantly how these different particle types relate to toxicity.

[Poster.]

Mr. MEEKER. This poster illustrates the different particle shapes that can be encountered in a single study area or sample, showing the transition from asbestiform in letter D to acicular in letter F to prismatic in letter I. Respirable fibers are extremely small. As an example, a soil or aggregate containing 0.25 percent respirable amphibole fibers could contain more than 25 million fibers per cubic centimeter. The degree to which respirable fibers can be liberated into the air by disturbance and become an inhalation hazard depends on many variables. Therefore, reliable determination of actual risk by direct measurement of the amount of fibers in the soil or aggregate would be extremely difficult.

Thank you for the opportunity to present this testimony. As a non-regulatory natural science agency, the USGS works closely with other Federal agencies and nonFederal stakeholders to help answer many important questions regarding the nature of asbestos-related minerals and to provide important information about where asbestos minerals occur in the United States. I am pleased to answer any questions that you might have.

[The prepared statement of Mr. Meeker follows:]

STATEMENT OF
GREGORY P. MEEKER
GEOLOGIST
U.S. GEOLOGICAL SURVEY
U.S. DEPARTMENT OF THE INTERIOR
BEFORE THE COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON ENVIRONMENT AND HAZARDOUS MATERIALS
U.S. HOUSE OF REPRESENTATIVES
FEBRUARY 28, 2008

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to present testimony on the mineralogy and geology of asbestos. My name is Greg Meeker and I am a geologist at the U.S. Geological Survey (USGS) in Denver, Colorado.

Asbestos

Many minerals found in nature grow in a form referred to as ***fibrous***, that is, they possess physical properties similar to organic fibers. ***Asbestos*** is a term applied to a special group of fibrous silicate minerals that form as long, very thin fibers that usually occur in bundles. When handled or crushed, the asbestos bundles readily separate into individual mineral fibers. This type of mineral growth form or "habit" is called ***asbestiform*** (National Research Council, 1984; Skinner and others, 1988). The special properties of commercial-grade asbestos—long, thin, durable mineral fibers and fiber bundles with high tensile strength, flexibility, and resistance to heat, chemicals, and electricity—make it well suited for a number of commercial applications. This definition for asbestos is based on the properties that make it valuable as a commodity. When asbestos regulations were developed in the 1970's it was these commercial fibers that were identified as most problematic from a health perspective because they were the most common species encountered in mining, processing, and manufacturing.

Although there are many asbestos minerals, some commercial and regulatory definitions of asbestos focus on chrysotile, the asbestiform member of the serpentine mineral group, and several members of the amphibole mineral group, including the asbestiform varieties of (1) riebeckite (commercially called crocidolite), (2) cummingtonite-grunerite (commercially called amosite), (3) anthophyllite (anthophyllite asbestos), (4) actinolite

(actinolite asbestos), and (5) tremolite (tremolite asbestos). Other environmental statutes address asbestos more broadly, as other amphiboles are known to occur in the fibrous and/or asbestiform habit (Skinner and others, 1988) but have not been utilized commercially. These include, for example, winchite, richterite (Wylie and Huggins, 1980; Meeker and others, 2003), and fluoro-edenite (Gianfagna and Oberti, 2001; Gianfagna and others, 2003).

Asbestos Mineral Nomenclature

The academic mineralogy community has long classified minerals by name. This mineral nomenclature has evolved dramatically over the years and continues to evolve in response to advances in analytical technology and many other factors. The current academic nomenclature system for amphiboles is endorsed by the International Mineralogical Association (IMA) and recognizes approximately 70 distinct amphibole minerals (Leake and others, 1997). Under this world-recognized system, amphibole minerals are named based on their chemical composition and the exact chemical boundaries between different amphibole minerals are defined on the basis of various mineralogical or other considerations. It should also be noted that in most cases there is chemical gradation (called ***solid solution***) between the different amphibole minerals. That is, there are rarely distinct natural chemical boundaries between the amphibole minerals, only arbitrary boundaries defined by the IMA.

Prior to 1978, amphiboles were primarily identified by optical properties using a transmitted light microscope. This optical identification led to ambiguities and multiple names in the technical literature for the same mineral. In 1978, the IMA's Committee on Amphibole Nomenclature made the decision to redefine amphibole names on the basis of chemical composition and published a classification system that required the use of highly accurate chemical analyses (Leake and others, 1978), with the intent to help reduce these ambiguities. The current amphibole nomenclature established in 1997 is generally similar to the 1978 nomenclature, with the exception that chemical boundaries between several of the amphibole minerals were shifted. In addition to the formal 1978 and 1997 changes in amphibole nomenclature, further confusion results because common

and commercial names for some asbestiform amphiboles are still used in some geological or commercial contexts; these include the names amosite, crocidolite, blue asbestos, brown asbestos, and white asbestos.

The "Libby, Montana amphibole" provides an excellent example of the difficulties that have arisen from the co-mingling of different amphibole nomenclatures. During the years that the Libby mine was active, geologists, miners, and regulators called the amphiboles tremolite, soda tremolite, sodium-rich tremolite, and, in one case, richterite. This terminology was used by the geologic and mineralogic communities, as well as by the health, regulatory, and industrial communities. The 1978 IMA change in nomenclature went largely unnoticed or was simply ignored outside of the community of academic mineralogists and geologists, and the Libby amphibole continued to be referred to as a sodium-rich variety of tremolite. Beginning in 2000, mineralogists began to reinvestigate the Libby amphibole and apply the current academic nomenclature, first identifying it as winchite (Wylie and Verkouteren, 2000) and later as winchite, richterite, and tremolite (Meeker and others, 2003). These findings have generated confusion in the asbestos community regarding the identification and nomenclature of the Libby amphibole and whether or not the material is regulated.

Some have taken the position that most of the Libby amphibole is primarily winchite and richterite and therefore is not currently regulated. However, if the nomenclature of Leake and others (1997) is the regulatory touchstone, then the following must also be true. Prior to 1978, all of the Libby asbestos (100 percent) would have been considered to be a form of tremolite and regulated based on the existing nomenclature at the time and the prescribed optical analysis methods for asbestos promulgated under National Emission Standards for Hazardous Air Pollutants (NESHAPs). Between 1978 and 1997 only 15 percent of the Libby asbestos would have been identified as tremolite based on the 1978 IMA system (Leake and others, 1978). Finally, after 1997, due to a mineralogically defined change in the IMA chemical boundaries (Leake and others, 1997), only 6 percent of the Libby asbestos would be classified as tremolite. There is no indication that the regulators intended different treatment for what remained the same underlying substance

during this time period. Nonetheless, the Libby amphibole has historically been referred to as tremolite asbestos, and even today could be considered to be a form of tremolite asbestos under the guidelines established for standard Polarized Light Microscopy (PLM) asbestos analysis.

The example above illustrates a subtle but critical point, the Libby amphibole was not originally mistakenly identified as tremolite. The Libby amphibole was correctly identified prior to 1978 as a sodium-rich tremolite based on existing nomenclature and analytical methods. It was also correctly identified as primarily winchite and richterite, after application of the new academic nomenclature using more modern analytical methods. In this example, the IMA inadvertently redefined a regulated material for reasons totally unrelated to asbestos regulation.

Finally, it should be recognized that the nomenclature for amphiboles in the academic community will likely change again in the future (Hawthorne and Oberti, 2006) and new species of fibrous and asbestiform amphiboles may be identified.

Size and Shape of Asbestos Particles

The size and shape of asbestos particles can vary substantially within a single sample and from one sample to another, even if the mineral type is the same. Historically, most commercial asbestos used in products has been chrysotile (Virta and Mann, 1994). Chrysotile tends to have very thin fibers that are often very long and flexible prior to processing. Amphibole asbestos fibers, however, can display a large range of sizes from very long and thin to thick, relatively short, and brittle. A variety of sizes and shapes of amphibole asbestos fibers can occur together and can be inter-grown at the microscopic scale. In addition to the amphibole fibers that fit the commercial definition of asbestos, other amphibole particle types can also occur, again intermixed at the microscopic scale. These other particle types are often referred to by mineralogists as fibrous (non-asbestiform), acicular (needle-like) and prismatic (prism-like) (Meeker and others, 2006). Unfortunately, there are no distinct boundaries between these particle types - they often show a gradation from one to the next in the same sample or material. Also, there is

considerable disagreement in the asbestos community about how to distinguish these particle types in a mixed sample and, more importantly, how these different particle types relate to toxicity. These issues were recently raised regarding naturally occurring asbestos in the community of El Dorado Hills California (EPA, 2008; Meeker and others, 2006).

Respirable fibers are those fibers small enough to penetrate into deep lung tissue. (Newman, 2001). Typically, not all fibers or asbestos particles in a material are of respirable size. A soil or aggregate sample containing 0.25 percent respirable amphibole fibers could contain more than 25,000,000 fibers per cubic centimeter. However, larger fiber bundles will continue to generate respirable fibers when disturbed. The degree to which respirable fibers could be liberated into the air by disturbance and become an inhalation hazard depends on many variables including the type of fiber or asbestos, the type of soil or aggregate, moisture content of the soil or aggregate, humidity of the air, and other factors. Therefore, any reliable determination of actual risk by direct measurement of the amount of fibers in the soil or aggregate would be extremely difficult.

Most amphibole minerals encountered in the majority of rock and soil types are not fibrous or asbestiform but occur as larger blocky or massive crystals. When these larger amphibole crystals are crushed or milled they break or "cleave" along specific directions that are related to the crystal structure of the particles. These particles are called ***cleavage fragments***. Cleavage fragment particles are sometimes long and thin and are often difficult to distinguish from the other particle types discussed above.

In addition to the amphibole and chrysotile particles discussed above, other natural minerals exist that can occur as fibrous, or elongated, particles of respirable size. These elongated non-asbestos particles can be referred to as ***elongated mineral particles (EMP)***. One of these minerals, fibrous erionite, has been associated with very high rates of mesothelioma in Central Turkey (Baris, 1978). Fibrous erionite occurrences have been described in some places in the United States (Sheppard, 1996).

Geology of Asbestos

Geologists have documented that asbestos is formed only in specific and predictable geologic settings (Van Gosen, 2007a). The rocks that host asbestos minerals are consistently magnesium-rich (and often also iron-rich) rock types that have been altered in form and composition by metamorphic geologic processes; examples include altered ultramafic rocks and metamorphosed dolomite-rich rocks. In general, asbestos deposits are relatively rare and usually comprise a small volume of the total host rock body. The areas in which asbestos has formed are limited in extent in the United States. The USGS is conducting a study to map the locations of known sites of natural occurrences of asbestos in the United States (Van Gosen, 2005, 2006, 2007b). This work shows that asbestos deposits of various sizes are known to occur in at least 35 of the 50 States. The highest concentrations of asbestos deposits occur in: the eastern States, in a belt stretching from east-central Alabama to Vermont and Maine; the west-coast States of California, Oregon, and Washington; the upper Midwest, in Minnesota and Michigan; and an area of east-central Arizona. This work also shows that significant portions of the United States are **not** geologically likely to have substantial asbestos deposits.

In order to be of commercial value, asbestos must be in sufficient quality and purity for the intended application, and must occur in sufficient abundance to be mined at a profit. In nature, such occurrences are very rare. Far more common is material that can be present in small veins or pods and in quality that can grade from asbestiform to fibrous to acicular to prismatic. The asbestiform component of this material, when undisturbed by human activity, is often called "***naturally occurring asbestos***." As most commonly used, naturally occurring asbestos (***NOA***) refers to asbestos that occurs as a minor to major mineral component in some rocks, soils, sediments or waters as a result of natural geological processes. The term NOA can also apply to asbestos that has been transported by natural weathering and erosion processes from its original geologic source rock into air, soil, sediment or water. (Van Gosen, 2006). Not included in this definition would be commercially processed asbestos-containing materials, such as some insulation and fire protective materials in buildings or some types of automobile brake pads, in addition to soils, sediments, or waters contaminated by commercially-processed asbestos.

In addition, NOA **should not** include asbestos that occurs as impurities in other processed industrial minerals. For example, some products have been made using certain types of talc or vermiculite that contain amphibole asbestos as a natural contaminant (Van Gosen and others, 2004; EPA, 2008a).

Thank you for the opportunity to present this testimony. As a non-regulatory natural science agency, the USGS works closely with other Federal agencies and with non-Federal stakeholders to help answer many important questions regarding the nature of asbestos-related minerals, to develop new analytical methods and procedures for asbestos-related materials, to develop asbestos-related standard reference materials, and to provide important information about where asbestos-related minerals occur in the United States.

I am pleased to answer questions you might have.

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Mr. WYNN. Thank you very much, Mr. Meeker. We certainly appreciate your testimony. You are providing us with a very good education. We will see if our questions bear that out.

I would like to recognize myself at this point for questions for 5 minutes. You mentioned the 0.25 percent standard. I would like to ask about allowing products with up to 1 percent asbestos to be imported, manufactured, and sold in the United States. How many fibers of asbestos would you expect to find in a product that contains 1 percent asbestos?

Mr. MEEKER. That is difficult to answer because every material would be different, but it could be as high as 100 million fibers per cubic centimeter.

Mr. WYNN. Would you say that again please?

Mr. MEEKER. It could be as high as 100 million fibers per cubic centimeter.

Mr. WYNN. OK, Dr. Miller, can exposure to products and materials containing less 1 percent cause disease?

Mr. MILLER. Clearly, exposure to products containing less than 1 percent can generate very high levels of exposure which would definitely be responsible for causing disease in the population, workers or others that may come into contact with such products or disturb such products might have exposures that would be consistent with what we have seen in populations that have been studied across the country that have developed disease commensurate with those exposures.

Mr. WYNN. What are some of the diseases that you have been able to observe?

Mr. MILLER. Well, the diseases that we see, regardless of whether it was from a product that was less than 1 percent asbestos or other materials containing higher concentrations of asbestos is the same diseases that we see across the board with asbestos exposures. Whether it is from chrysotile or amphibole exposures, you will see mesothelioma, lung cancers and fibrogenic lung disease consistently with respect to these exposures.

Mr. WYNN. Let me go back to you, Mr. Meeker. Do all labs determine the asbestos content of a product in the same way?

Mr. MEEKER. The labs are supposed to follow methods that have been validated; however, the methods are very subjective, and so if you were to take the same sample from one lab to the next, you might get a very different result from the same sample.

Mr. WYNN. Dr. Weis, has the United States Government, to your knowledge, or private parties for that matter conducted research on asbestos exposure resulting from the manufacture or use of products that contain small amounts of asbestos?

Mr. WEIS. Yes, Chairman Wynn, there are a number of studies, in fact, by our Government, by the Canadian Government, by private individuals and industry scientists that indicate concentrations far below 1 percent, as low as 0.001 of a percent can generate airborne concentrations of concern for exposure.

Mr. WYNN. Could you provide the subcommittee with those studies please?

Mr. WEIS. Yes, sir.

Mr. WYNN. That would be very helpful if you could do that.

Also, I would like to ask you, as a toxicologist at EPA you study risk to human health. When you studied the amount of asbestos people are being exposed to, why is it so important to measure asbestos in the air?

Mr. WEIS. Very important question. Asbestos is a problem when it is breathed in. There are also some concerns for ingestion, but those are of far less importance to us. And so when we measure risk from exposure to asbestos, we always look for airborne measurements. I think Mr. Gulliford made it clear that measurements in bulk materials are not and never will be risk based.

Mr. WYNN. I wanted to ask you one other question. What, exactly, are cleavage fragments?

Mr. WEIS. That question, actually, might be better answered by Mr. Meeker, who is an expert in mineralogy.

Mr. WYNN. Mr. Meeker?

Mr. MEEKER. Cleavage fragments are particles that are defined because they are broken. They cleave along specific directions in the crystal, and so by definition, cleavage fragments have to be crushed or milled during some process.

Mr. WYNN. Thank you very much for your testimony, gentlemen. Mr. Shadegg? I see this is going to a very interesting experience. We are going to have fun here. The chair recognizes Mr. Shadegg for questions.

Mr. SHADEGG. Thank you, Mr. Chairman. Let me begin with a question that I at least want to get very clear in my own mind. We are talking about in the standards set here 1 percent by weight in a given product, which is the standard used in S. 742. And when we talk about aggregation this bill, they are talking about 0.025 percent, again by weight. Obviously, the concentration of asbestos in a product is one issue. But the length and intensity of exposure is another issue. The point being, each of you said you could be exposed to dramatically less than 1 percent and have it be dangerous and, indeed, disease causing. And I believe, Mr. Meeker, you said, or maybe you all said, that exposure to less than 0.25 percent could be disease causing. I presume that if you were exposed to 0.25 for a nanosecond, that would be one thing. If you were exposed to it for 24 hours a day, 7 days a week for 15 years, that would be a different level of exposure. So there are two factors, not just the concentration in the product, which is measured as a percent by weight, but also the length and intensity of the exposure, correct? You would all agree to that, I assume? OK.

Second question, I want to talk a bit about chrysotile asbestos because I am trying to learn about it. I thought I learned about it a few years back. Dr. Miller, you indicated that there are studies showing disease-you may not have said all forms of asbestos, but you said chrysotile asbestos and amphiboles. Have there been specific studies done on diseases caused by exposure only to chrysotile asbestos?

Mr. MILLER. Yes, there have.

Mr. SHADEGG. Can you supply those to me?

Mr. MILLER. Yes, we can.

Mr. SHADEGG. Does that fall in the expertise of either of the other gentlemen?

Mr. WEIS. I would agree with Dr. Miller on that.

Mr. SHADEGG. I would very much like to see the studies that focus on exposure to chrysotile asbestos.

Let me ask another question on that point. Is there a debate within kind of the asbestos industry or community over the degree of disease linked to exposure to chrysotile as opposed to amphibole asbestos?

Mr. MILLER. Yes, there is, and the discussion really focuses on the fact that we recognize that all of the asbestos forms are toxic, but it appears that the amphiboles may be more toxic with respect to the causation of mesothelioma than chrysotile asbestos, and that is the focus of the discussion. But with respect to lung cancer and fibrogenic lung disease, it is clear that they all are toxic.

Mr. SHADEGG. Thank you. That is what I thought. If you can find relatively layman-eqsue studies that show, you know, that chrysotile is less causative of mesothelioma but is causative of that together, that would help me as well.

Mr. Meeker, I want to ask you, I understand the distinction between chrysotile and amphibole to be that the fibers in amphibole are brittle and break, and as I understood it when I learned it, have a tendency to stick in the lung by essentially like tiny little pins, and that the difference between amphibole and chrysotile is that chrysotile is soft. It is more like string and less like something brittle which can form a sharp point and stick. Is that your understanding? I understand that is a layman's explanation, but——

Mr. MEEKER. The poster I have here, I don't have a picture of crystatile up there, but in letter A, that would be similar to what crystatile looks like. That is an amphibole, and amphibole can show a wide range of shapes and sizes and flexibility, and so the amphibole in letter A is from new Caledonia, and it appears to be flexible and very thin. Letter B is an amphibole from the NIST, National Institute of Standards and Technology, certified reference material. It is a tremolite amphibole standard, and I think you can see, there, that that is what you were describing as more like pins, and you can find examples that grade from one to the next, even in the same sample, so it is not always one way or the other.

Mr. SHADEGG. Sounds like I get to learn a lot more. Thank you.

Mr. WYNN. At this time, the chair is pleased to recognize the gentlelady from California, Ms. Capps, for questions.

Ms. CAPPS. Thank you, Mr. Chairman.

Dr. Miller, if I could ask you a question please. This committee is considering banning asbestos down to 0.25 percent by weight for byproducts of stone, sand and gravel. Is this an acceptable threshold for human exposure by this industry?

Mr. MILLER. Well, we find that continued disturbance of products, even at that low-level of contamination will generate airborne exposures that can be very, very hazardous. As a matter of fact, it is easy to measure the exposures in the air. And as Dr. Weis alluded to a moment ago, if you have materials that may have 0.25 percent levels of asbestos contamination or lower, if you disturb them, we can easily measure the exposures in the air, and clearly, we know these exposures are associated with disease and readily present an opportunity for exposure, not only to workers, but to others across America.

Ms. CAPPS. No matter how minimal?

Mr. MILLER. No matter how minimal.

Ms. CAPPS.

Mr. MILLER. Again, it will vary with the material.

Ms. CAPPS. Dr. Weis, I have two questions for you if I could please. I understand that EPA is currently working on a test method that would be used to measure asbestos releases from soils and other solids. I think that follows on with what Dr. Miller just said because when it is disturbed, that is where we need to really measure if we can. Can you tell me what the status of that work is?

Mr. WEIS. Yes, Congresswoman Capps. As has been mentioned several times this morning, we are interested primarily in exposure in air. And so the agency has been working hard over the last several years, actually, in developing a rapid technique for disturbing asbestos contaminated materials, sending fibers into the air, and then measuring the air where our measurements are far more precise than they are in the bulk materials. That work is underway. I can't tell you exactly what the schedule for that is. I can tell you that there is tremendous interest in pushing that forward.

Ms. CAPPS. Are there any limits to your being able to do it? Is there the technology to measure?

Mr. WEIS. I believe the technology is there, yes, absolutely.

Ms. CAPPS. So that is where any research dollars should continue?

Mr. WEIS. Yes, it is a matter of time and resources.

Ms. CAPPS. I hear you. You just have to follow the testing, right? But the more resources we have, the faster you could move, too.

Mr. WEIS. I think that is true, yes.

Ms. CAPPS. Yes, let me ask you in anticipation of testimony that is going to be given in the next panel, Dr. Nolan in his written statement says that OSHA does not regulate these non-asbestos fibers after having a rule-making to determine that they do not present health hazards similar to asbestos. Will you evaluate that statement for me?

Mr. WEIS. What I can say, Congresswoman, is that OSHA says in their regulations if you are in doubt, then the fibers should be counted. I think Mr. Meeker has alluded to the fact, quite clearly, that measurements are subjective, and they are often to the opinion of the analyst, and OSHA says quite clearly in their regulation if you are in doubt of what this material is, then, it should be counted as a fiber.

Ms. CAPPS. Just a recognition of it as a fiber, you don't have to measure it or anything else, the recognition is enough of an acknowledgment?

Mr. WEIS. The particle must have the same shape and form as a regulated fiber, but if it does, regardless of its chemistry or subtle morphology, if the analyst cannot determine using the technology they have whether it is a fiber, it should be counted. That is what OSHA says.

Ms. CAPPS. And that is sort of the standard now?

Mr. WEIS. That has been the standard for a long time.

Ms. CAPPS. That is the end of my questions. Thank you very much.

Mr. WYNN. Thank you very much.

Mr. WEIS. Thank you.

Mr. WYNN. Gentlemen, again, thank you very much for your testimony and answering our questions. You may be excused.

All right, I think we are ready to proceed with our third panel. Again, I would like to welcome you and thank you for your attendance here today. I would like to introduce Ms. Linda Reinstein, who is Executive Director of Asbestos Disease Awareness Organization; second, Ms. Margaret Seminario, Director Safety and Health, American Federation of Labor and Industrial Organizations; Dr. Roger McClellan, Advisor, Inhalation Toxicology Human Health Risk Analysis; Dr. Robert Nolan, Environmental Studies International; Dr. Richard Lehman, Assistant Surgeon General, Retired, U.S. Public Health Service; and Dr. James Millette, Executive Director of MVA Scientific Consultants. We would like to have your 5-minute opening statements. Of course, your full testimony has been included in the record, and again, thank you for coming.

Ms. Reinstein.

STATEMENT OF LINDA REINSTEIN, EXECUTIVE DIRECTOR AND COFOUNDER, ASBESTOS DISEASE AWARENESS ORGANIZATION

Ms. REINSTEIN. Mr. Chairman, and members of the subcommittee, my name is Linda Reinstein. I am honored to appear before you as the executive director and cofounder of the Asbestos Disease Awareness Organization, ADAO, as an independent, nonpartisan volunteer organization, whose goal is to provide the most current education resources and support. I am neither a lobbyist nor an attorney, only a volunteer, and now a mesothelioma widow and a single mother.

Today, Doug Larkin, T.C. McNamara, U.S. Capitol Tunnel Workers, and I represent victims and family who suffered the traumatic effects of asbestos diseases due to occupational or non-occupational exposure. In 2006, my husband Alan Reinstein, lost this 3-year battle with mesothelioma, a cancer caused by asbestos. When Alan died, my then 13-year-old daughter and I joined thousands of Americans who are mourning the loss of loved ones, losses which could have been prevented.

The use and importation of all asbestos-containing products should be banned in the United States. As we discuss a complete ban today, your final decision will determined if we will continue to allow asbestos to killed Americans, or if Congress will pass legacy legislation banning asbestos in any form, any product, any use.

Scientists agree: asbestos is a carcinogen, and there is no safe level.

[Slide.]

Ms. REINSTEIN. The penny slide on my left that you are looking at compares the nearly invisible deadly fibers just under President Lincoln's nose to grains of rice and human hair. These virtually indestructible asbestos fibers can be 700 times smaller than human hair, and remain suspended in air from seconds to days. Inhaling or swallowing asbestos fibers permanently penetrate lung and other tissue and can cause cancer or other respiratory diseases, exacerbated by a latency period of 10 to 50 years, these diseases are routinely underreported and misdiagnosed.

More than 10,000 lives will be lost this year. Imagine struggling to breathe air through a pinched straw, every breath, every minute, every day. As victim's oxygen levels become critically low, they are tethered to supplemental oxygen to extend their lives. Within 6 to 12 months of diagnosis, the average mesothelioma patient dies. Each life lost leaves a shattered family behind.

In hopes of a cure, many patients opt for radical treatment, such as having their diseased lung or diaphragm surgically removed. We call this death by 1,000 cuts. But remember, there are 8,000 more patients dying from other asbestos-caused cancers, asbestosis, or respiratory diseases.

Asbestos has not been banned in the United States. Most Americans believe it was banned long ago, and they are shocked to learn that asbestos is still a deadly threat. Even today, the EPA states that there are 3,000 products containing asbestos, yet there is no Federal testing program for consumer products or children's toys.

ADAO commissioned three independent Government-certified laboratories to test for asbestos in consumer products found on retail shelves. On 11/27/07, we reported five contaminated products and a toy. The CSI fingerprint on the table today has tremolite in it, one of the deadliest forms of asbestos, in a toy powder, intended to be made airborne by children. Our resent results were immediately disclosed to the EPA and the CPSC. To the best of our knowledge, neither agency initiated action.

ADAO applauds the U.S. Senate for unanimously passing S. 742, a landmark bill to reduce asbestos exposure and fund educational programs, research, registries, and treatment centers. However, S. 742 does not completely ban asbestos use, and perpetrates a false sense of security by only prohibiting industrial materials, consumer products with greater than 1 percent by weight. This means that the contaminated products on the table, such as the CSI kit would remain legal on store shelves.

Scientific technology has made gigantic strides in asbestos detection since the 1970's, and we don't have to compromise public health by using antiquated analytical methodology. On behalf of ADAO, asbestos victims' families, leading doctors, and scientists, I implore you to ban this deadly toxin. We believe an immediate ban on all asbestos-containing products is fully justified, absolutely necessary and long overdue. One life lost to asbestos disease is tragic. Hundreds of thousands of lives lost is unconscionable. The United States Congress has the opportunity and responsibility to protect Americans from these preventable diseases.

Today, I also brought over 25,000 signatures in petition form, asking Congress to please ban asbestos. Thank you.

[The prepared statement of Ms. Reinstein follows:]

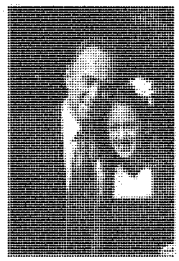
Prepared Statement of
Linda Reinstein
Executive Director and Co-Founder
Asbestos Disease Awareness Organization
Before the
U.S. House of Representatives
Subcommittee on Environment and Hazardous Materials of the
Committee on Energy and Commerce

Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products

February 28, 2008

Mr. Chairman and Members of the Subcommittee, my name is Linda Reinstein.

Alan Reinstein - *Mesothelioma Victim*
1939 - 2006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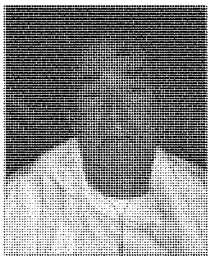
May 2006

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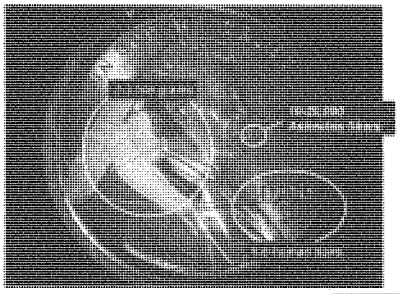
Use and importation of all asbestos-containing products should be banned in the United States. As we discuss a complete product ban today, your final decision will determine if we will continue to allow asbestos to kill Americans or if Congress will pass legacy legislation banning asbestos in any form, product or use.

Scientists agree: Asbestos is a carcinogen and there is no safe level of exposure.

The International Agency for Research on Cancer (IARC) declared asbestos a human carcinogen 30 years ago. The Environmental Protection Agency, (EPA) World Health Organization (WHO) and the International Labor Organization (ILO) agree: there is no known safe level of asbestos exposure. The Penny slide you are looking at compares the nearly invisible deadly fibers just

How small is asbestos?



under President Lincoln's nose to grains of rice and human hair. These virtually indestructible asbestos fibers can be 700 times smaller than human hair and remain suspended in air from seconds to days.

Inhaling or swallowing asbestos fibers permanently penetrate the lung and other tissue and can cause cancers or respiratory diseases. Exacerbated by a latency period of 10 - 50 years, these diseases are routinely under-reported and frequently misdiagnosed.

More than 10,000 new victims and their families will suffer this year alone. Imagine struggling to breathe air through a pinched straw, for every breath, every minute, every day. As the victim's oxygen level becomes critically low, they are tethered to supplemental oxygen to delay and extend their inevitable agonizing death.

Within six to 12 months of diagnosis the average mesothelioma patient dies. Each life lost leaves a shattered family behind. But remember, there are 8,000 more patients dying from other asbestos-caused cancers, asbestosis or respiratory diseases.

In hopes of a cure, many patients opt for radical treatments, such as having a diseased lung or diaphragm surgically removed. We call this death by 1,000 cuts. Multiple surgeries, chemotherapy, and radiation treatments are common and can cost the patient and his family in excess of $1 million dollars.

Asbestos has not been banned in the United States. When asked, most Americans believe that asbestos was banned long ago and are shocked to learn that asbestos is still a deadly threat. Even today, the EPA states there are 3,000 products containing asbestos, yet there is no federal asbestos testing program for consumer products or children's toys.

Products Found to Contain Asbestos

Reinstein – U.S. House of Representative Subcommittee on Environment and Hazardous Materials

ADAO commissioned three independent, government certified laboratories to test for asbestos in consumer products. We tested random consumer products taken from American retail shelves and confirmed asbestos in five products. We found tremolite asbestos, one of the deadliest forms of asbestos, in a toy powder intended to be made airborne by children. On 11.28.07 we reported contamination in: the Planet Toys CSI Fingerprint Examination Kit (a popular children's toy), DAP "33" window glazing, DAP "Crack Shot" spackling paste, Gardner "Leak Stopper" roof patch, and Scotch Duct Tape. Previously, research by others also found asbestos in children's play clays and crayons. Only private financial contributions and concern produced these results, which represent testing of only a very small fraction of the suspect domestic and foreign products on American shelves.

Our recent test results were disclosed immediately and completely to the EPA and the CPSC. To the best of our knowledge, neither agency initiated any action based on our submitted product testing reports.

Americans trust and expect that their air, soil, and water are safe from toxic contaminants; but as victims, we know the truth. Just walk the streets of Libby, Montana, or New York City or talk to the U.S. Capitol Tunnel Workers, all innocent Americans exposed to asbestos now living with irreversible damage caused from asbestos. The stress and trauma is life altering, potentially deadly for those Americans with known asbestos exposure waiting for time, to reveal their medical fate.

The ADAO applauds the U.S. Senate for unanimously passing S. 742 a landmark bill to reduce asbestos exposure and fund educational programs, research, registries and treatment centers. However, S. 742 does not completely ban asbestos use and perpetuates a false sense of security by only prohibiting industrial materials, consumer products, and toys with greater than 1 percent asbestos content. This means that contaminated products, such as the CSI children's fingerprint kit, could legally remain on market shelves and will continue to threaten the health of American men, women and children.

The American public does not understand or care about the difference between ACP or ACM. Scientific technology has made gigantic strides in asbestos detection since the 1970s. We don't have to compromise public safety by using antiquated analytical standards.

On behalf of the ADAO, asbestos victims, and their families, I implore you to: Ban the use and importation of this deadly toxin. We believe that an immediate worldwide ban on all asbestos-containing products is fully justified, absolutely necessary, and long overdue. And yes, safer, affordable alternatives do exist. Support for a total asbestos ban comes from some of the most well respected members of the scientific community, health professionals and victims from around the world. I would like to ask to submit the signatures into the record.

One life lost to asbestos disease is tragic; hundreds of thousands of lives is unconscionable. The United States Congress has the opportunity and responsibility to protect Americans from these preventable asbestos-related diseases.

Thank you.

Mr. WYNN. Thank you very much for your testimony. I am very sorry for your loss, but I applaud your commitment to engage in this discussion and find proper solutions. Thank you very much for coming today.

Ms. Seminario.

STATEMENT OF MARGARET SEMINARIO, DIRECTOR, SAFETY AND HEALTH, AMERICAN FEDERATION LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

Ms. SEMINARIO. Chairman Wynn, Ranking Member Shadegg, I appreciate the opportunity to testify today on behalf of the AFL/CIO, on legislation to ban asbestos. The AFL/CIO strongly supports Federal legislation to ban asbestos. We applaud the efforts of Senator Murray to champion and guide the passage of legislation in the Senate and the efforts of this committee to initiate similar legislative activity in the House of Representatives.

Without question, exposure to asbestos has resulted in the greatest occupational health epidemic in the Nation's history, in actually the world's history. Hundreds of thousands of workers have died from asbestosis, lung cancer, mesothelioma, and other cancers, and the mesothelioma cases are still increasing. In 2004, there were over 2,600 mesothelioma deaths reported.

For decades, the AFL/CIO and our affiliated unions have fought to protect workers from the hazards of asbestos. Immediately following the passage of the Occupational Safety and Health Act, we petitioned for emergency action by OSHA, and the first OSHA asbestos standard was issued, but it was not protective, and so we continued, through petitions, through litigation, through Congressional action, moving forward to strengthen the standard, moving into a stronger standard in the mid-1970s, 1980s, and finally in 1994 the issuance of the 0.1 fibers/cc standard by OSHA.

But these standards, actually, have not been sufficient to protect workers. The early standard didn't address the asbestos cancer risk that was posed, and even the existing standard, according to OSHA and according to NIOSH, leave workers at significant risk of harm. That standard, the 0.1 fibers/cc, was again set based on the limits of detection. It was not set as a level to protect workers.

But it is important to recognize, even though we had a legally binding standard, that there are still many, many workers exposed to asbestos because of the volume of asbestos that is in palace. It is largely among construction workers, maintenance workers and other who continue to be exposed. And last year, in 2007, OHSA reported that there were 761 violations of its asbestos standard, and those were just the violations that they saw and that they were able to document, and we know the situation is much more far reaching.

I think most people don't know that in the mining industry, for those workers, they are still legally allowed to be exposed to 2 fibers per cubic centimeter. That is a level that was last set by OSHA in 1986. And here, 22 years later, in the mining industry, we still have workers legally exposed to those levels. We are hoping that MSHA will move on that, and we expect them to do so, but again, they are exposed to very, very high levels of asbestos, and It is not only the workers who are at risk. As we have heard, we

have family members who are exposed, the take-home exposures and the exposures among the public from exposures in communities like Libby, Montana.

Our experience with this devastating epidemic, and the difficulty of controlling exposures, even with the legal standards, over the long life span of this product led us to the conclusion many years ago that asbestos should be banned. We simply must remove asbestos from the stream of commerce in this country.

Let me turn, now, to S. 742 and the committee print. We believe that the goal of asbestos-ban legislation should be to stop the introduction of asbestos into the stream of commerce as quickly as possible. And given the potential for serious health affects at low levels of exposure and great difficulty in controlling exposures over the lifecycle of this product, we believe that the goal of the legislation should be to apply the ban on asbestos as broadly as possible. And to this end, we do have real concerns about the 1 percent threshold for the application of the asbestos ban that is in the Senate bill. In our view, and as we have heard from others, this threshold will allow levels of asbestos contamination that have a real potential to pose a significant health risk to workers and the public.

And let me, just again, do a comparison. We heard from the previous witness, from Mr. Meeker, that exposures with 1 percent could result in exposures to 100 million fibers. The OSHA limit is 0.1 fibers per cubic centimeter. The exposure limit, single exposure, is one fiber. One hundred million fibers from 1 percent compared to a legal limit of one fiber: that gives you some sense of the level of exposure that would be allowed under 1 percent and how they compare to what is legally required right now.

Let me just, also, say that with respect to the way the bill is crafted, again, we think that the ban should be broad. We think the 1 percent exclusion should be eliminated and to the extent that we have to deal with particular area of concern and feasibility issues that those should be dealt with through narrowly-crafted exemptions. So we support the exemption-based approach, crafted as narrowly as possible.

Let me also say that with respect to the implementation of the ban, the Senate bill allows for 2 years. We think that if this is done, statutorily, that we should be looking at doing this in a much quicker fashion, 6 months or year.

And let me just conclude by saying that the Senate bill mandate for the various health studies and for the treatment centers that are provided for, we think are very, very important, and we would encourage the full committee and the health subcommittee to take up these provisions as well.

So let me just conclude and say that asbestos has been responsible for the deaths of hundreds of thousands of Americans. The terrible legacy continues, and we urge the committee to move quickly and to adopt strong protective asbestos-ban legislation. Thank you.

[The prepared statement of Ms. Seminario follows:]

Testimony of Margaret Seminario,
Director, Safety and Health
American Federation Labor and Congress of Industrial Organizations
Before the House Subcommittee on Environment and Hazardous Materials of the Committee on Energy and Commerce
Legislative Hearing on S. 742, The Ban Asbestos in America Act of 2007 and Draft Legislation to Ban Asbestos In Products
February 28, 2008

Chairman Wynn, Ranking Member Shimkus and members of the committee, I appreciate the opportunity to testify today on behalf of the AFL-CIO on legislation to ban asbestos. During my more than 30 years with the AFL-CIO, I have worked on asbestos regulations and legislation, including OSHA asbestos regulations, EPA's asbestos ban and regulations and legislative efforts to compensate asbestos victims for their diseases. I also participated in the development of the ILO Convention on Asbestos adopted in 1986, and led the successful efforts at the 2006 ILO Conference to adopt a resolution calling for the elimination of the future use of asbestos worldwide.

The AFL-CIO strongly supports federal legislation to ban asbestos. We applaud the efforts of Senator Patty Murray to champion and guide the passage of asbestos ban legislation in the Senate and the efforts of this committee to initiate similar legislative efforts in the House of Representatives.

Without question, exposure to asbestos has resulted in the greatest occupational health epidemic in the nation's history. Hundreds of thousands of workers have died from asbestosis, lung cancer, mesothelioma and other cancers, and hundreds of thousands more have been disabled. While exposures to asbestos and its use have been reduced, this legacy of disease continues. Mesothelioma cases are still increasing, with 2,657 mesothelioma deaths reported in 2004 and an estimated 10,000 workers dying each year of all asbestos-related diseases (NCHS, 2007 and EWG, 2004).

For decades, the AFL-CIO and our affiliated unions have fought to protect workers from the hazards of asbestos. Immediately following the passage of the Occupational Safety and Health Act, in 1971, the AFL-CIO's Industrial Union Department petitioned OSHA to take emergency action to regulate asbestos. In response to that petition, the Department of Labor issued an emergency standard on asbestos – the first standard under the new legislation – in December 1971. But that standard, and the subsequent permanent rule, failed to adequately protect workers. So our efforts to reduce asbestos exposures continued, through the 1970's, 1980's and 1990's, repeatedly seeking stricter control measures through further petitions, legislation and court action. The unions' efforts led to the current OSHA asbestos standard that sets a permissible limit of 0.1 fibers/cc, issued in 1994.

But these standards have not been sufficient to protect workers. The early standards failed to address asbestos' cancer risk. And even the current standard, which was constrained by feasibility considerations and available sampling and analytical methods, leaves workers at significant risk. According to OSHA, exposure to levels of asbestos permitted by the standard will result in 3.4 excess cases of cancer and 2.5 cases of asbestosis for every 1,000 individuals exposed over a working lifetime (OSHA 1994).

Unfortunately, many workers continue to be exposed to asbestos. While the new use of asbestos has dramatically declined in the United States, largely as a result of product liability litigation, millions of tons of asbestos remain in place, exposing construction, demolition, maintenance workers and others to this serious hazard. Too many employers ignore or fail to follow required asbestos control measures continuing to put workers in danger. For 2007, OSHA reported 761 violations of its asbestos standards, the majority of them in the construction industry (OSHA 2008).

In the mining industry, which is covered by the Mine Safety and Health Act, the permissible exposure limit for asbestos is still 2 fibers/cc, putting workers in that industry at very great risk. A new revised MSHA asbestos standard lowering the level to 0.1 f/cc is expected to be finally issued – 14 years after OSHA adopted this exposure limit and decades of foot dragging by MSHA.

And it is not only workers who are at risk. Mesothelioma and other asbestos diseases have been well documented among family members who were exposed through take-home exposures by workers. In some cases these exposures were of limited short duration. Similarly, members of the public have been exposed through community and environmental exposures, as was the case in Libby, Montana where thousands of residents were unknowingly exposed to asbestos contaminated vermiculite, causing widespread disease. Other mined and quarried products contaminated with asbestos, including talc, taconite, and road aggregate also present exposure risks to both workers and the public. Excess disease has been documented among individuals exposed to contaminated talc and taconite and among individuals who live in close proximity to areas contaminated with naturally occurring asbestos. There is growing concern about the health risks of low-level exposures to asbestos among the public and workers.

The AFL-CIO's experience with the devastating epidemic of disease caused by exposure to asbestos and the difficulty of controlling exposures over the long lifespan of this product led us to the conclusion many years ago that asbestos should be banned. We strongly supported EPA's efforts in the 1980's to ban the use of asbestos in a wide range of products and were greatly disappointed when the government abandoned those efforts after the 1989 asbestos ban regulation was struck down in court. Even though the use of asbestos has greatly declined since that time, asbestos is still being used in a number of products. In addition, the

contamination of imported toys and other products with asbestos is a growing concern, with the government lacking authority to take the necessary action to keep these products out of the stream of commerce.

Federal legislation is necessary to put an end to the future use of asbestos. Such action will not only protect American workers and members of the public. It will also set an example that will greatly assist in efforts to ban asbestos in other countries where asbestos use and exposures pose a mounting health risk that left unabated will continue the asbestos disease epidemic worldwide.

Comments on S. 742 and the Committee Draft Legislation to Ban Asbestos

It is the AFL-CIO's view that the goal of asbestos ban legislation should be to stop the introduction of asbestos into the stream of commerce as quickly as possible. Given the potential for serious health effects at low levels of exposure, and great difficulty in controlling exposures over the lifecycle of this product, the goal of the legislation should be to apply the ban on the use of asbestos as broadly as possible.

Definition of Asbestos and Thresholds

To this end, the AFL-CIO has great concern with the 1% threshold for the application of the asbestos ban contained in the S. 742 as passed by the Senate. In our view, this threshold level will allow levels of asbestos contamination that have the real potential to pose a significant health risk to workers and the public.

The 1% threshold was included in the Senate bill by applying the asbestos ban to "asbestos-containing materials" as defined in the Asbestos Hazard Emergency Response Act (AHERA). However, EPA has been clear that the 1% concentration of asbestos cannot and should not be considered a safe limit. In a 2004 memo, EPA's Michael B. Cook, Director of the Office of Superfund Remediation and Technology Innovation directed the regional

Superfund National Policy Managers not to assume that materials containing less than 1 % asbestos did not pose an unreasonable health risk (EPA, 2004). The memo points out that the 1% threshold used in asbestos regulations under the Clean Air Act and AHERA statute were based upon limits in the asbestos sampling method, and is not a health-based limit. On the contrary, the memo cites data from the Libby, Montana superfund site that showed soil and debris containing less than 1% asbestos released unacceptably high levels of airborne asbestos. A subsequent 2005 memo by the Senior Medical Officer at the Libby Asbestos Site, Dr. Aubrey Miller, reiterated this warning, also pointing to other published research demonstrating significant levels of airborne asbestos generated by soils containing asbestos in concentrations of less than 1% (Miller, 2005).

MSHA has also recognized the hazards posed by asbestos present in materials in lower concentrations. In the preamble to its proposed asbestos standard in 2005, MSHA reported that sampling at a wollonstonite mine where the asbestos averaged 1.3% of the total fibers, found that over half the worker exposures in the mill exceeding 0.1 f/cc, with some concentrations in excess of the current 2.0 f/cc MSHA standard (MSHA, 2005). As noted, OSHA has determined that exposure to such level pose a significant risk of developing cancer. Both the OSHA asbestos standard and proposed MSHA asbestos standard require health warning labels for asbestos products that contain in excess of 0.1% asbestos by weight.

It is the AFL-CIO's view that the 1% asbestos threshold in S. 742 will put workers and the public at increased risk of disease, and should be eliminated. The proposed definition of asbestos in the House Committee Draft, which is similar to the definition of asbestos that was contained in S. 742 as introduced is much more protective, and we would urge the committee to adopt a definition of asbestos which does not include a threshold. To the extent that there are products for which a zero threshold is not feasible, these products can be addressed on a

case-by-case basis through an exemption process, as provided for in both the Senate and House bills.

Exemptions

Both S. 742 and the House draft provide for exemptions from the asbestos ban. Ideally, the AFL-CIO would like to see a ban on the use of all asbestos and asbestos products. But to the extent there are exemptions, they should be narrowly crafted, be granted only if the continued use does not pose a risk to health and be in place only as long as needed for substitute products or processes to be developed. In addition, such exemptions should only be granted after a public rulemaking process, as is provided for in the House draft for non-governmental exemptions.

The AFL-CIO is concerned about the statutory exemption granted the chlorine industry for the use of asbestos in the diaphragm-cell process. Significant amounts of asbestos are used in this process and there is potential for worker exposure. Both S. 742 and the House Committee print require that EPA re-evaluate the exemption for existing diaphragm cell processes three years after enactment and every six years thereafter to determine if continued use poses a risk. But unlike for the general exemption provisions, there is no requirement that the Administrator determine if there are available substitutes that can be used. According to testimony provided by Dr. Barry Castleman during the Senate hearings, there are alternative technologies that can be used in the chor-alkali process that do not require asbestos (Castleman, 2007). These technologies are being widely utilized in Europe. Rather than provide an open-ended exemption to the chor-alkali industry, the legislation should set a time frame for phasing out the use of diaphragm cell processes that rely on asbestos.

The House draft also includes an exemption for the use of aggregate products extracted from stone, sand or gravel operations if they contain less than 0.25% asbestos or lower limit if

specified by the EPA Administrator, if they are used in cemented products. The provisions in the House draft are similar to those adopted by the State of California in regulations to address the use of contaminated aggregate in road construction. The 0.25% content was based upon the limits of detection in the sampling method (CARB 435) relied on in the California regulation.

The AFL-CIO believes that the goal of the legislation should be to eliminate asbestos and asbestos contaminated products from the stream of commerce. To this end, the bill should direct EPA to lower the asbestos threshold for aggregate products to the limits of detection of the analytical method recommended by EPA, and not require a separate finding that the asbestos threshold level is not protective of human health.

Implementation and Timelines

The Senate bill would implement the asbestos ban by rule; the House draft proposes that it be done directly by statute. Given the lengthy and resource intensive nature of the rulemaking process, implementing the ban statutorily is much more preferable.

Both versions of the bill provide a two-year timeframe for implementation of the asbestos ban. This two-year timeframe makes sense if the ban is implemented by rule, but if implemented by statute, a shorter time frame should be considered. We would recommend that the ban take effect six months after the enactment of the statute, and certainly no later than one year after the law is passed.

Scientific Studies, Research and Treatment

The Senate bill mandates a number of important studies on the health effects of asbestos and other elongated mineral particles. These studies are not included in the current House draft bill, since these issues are under the jurisdiction of the Health Subcommittee. There is great concern about the health effects of non-asbestiform minerals and other minerals

that have physical characteristics similar to asbestos, particularly since some of these products may be used as substitutes for asbestos and are essentially unregulated. We urge the Energy and Commerce Committee to include the NIOSH and National Academy of Sciences reviews of the health effects of non-asbestiform minerals and elongated particles in the bill reported by the full Committee. In addition, we urge the Committee to include the research provisions on asbestos-related diseases and the establishment of an asbestos-related disease research and treatment network that are included in section 4 of S. 742.

Conclusion

Asbestos has been responsible for the deaths of hundreds of thousands of Americans, and the terrible legacy of deaths and disease continues. It's time to finally ban this toxic product and stop its future use.

We urge the committee to adopt legislation that is broad and comprehensive and eliminates the 1% threshold included in the Senate bill, and to move expeditiously so asbestos ban legislation can be enacted into law before this session of Congress concludes.

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Mr. WYNN. Thank you for your testimony. Dr. McClellan.

STATEMENT OF ROGER O. MCCLELLAN, ADVISOR, TOXICOLOGY AND HUMAN HEALTH RISK ANALYSIS

Mr. MCCLELLAN. Good afternoon, Chairman Wynn and Ranking Member Shadegg. Thank you for the invitation to present my views on S. 742 and draft legislation to ban asbestos in products. It is an honor and a privilege to again have the opportunity to testify before this committee on the scientific basis of important proposed legislation.

I request that my testimony be entered into the record as though it was read in its entirely. My testimony today draws on more than four decades of experience working in air-quality issues. The testimony I offer today also draws on experience serving on numerous scientific advisory committees for the U.S. Environmental Protection Agency, including service as chair of their Clean Air Scientific Advisory Committee. I have also served on advisory committees to many of the other Government agencies that have been concerned with air-quality issues, the National Research Council, the Institute of Medicine, and international agencies such as the World Health Organization and the International Agency for Research on Cancer.

I am testifying today at the required of an ad hoc group of associations who shared concern is the clarity of distinction between asbestiform fibers and non-asbestiform fibers. However, the opinions that I express today are those of my own personal scientific views. My testimony is grounded in a conviction that scientific information should inform legislation and agency policy judgments that are required to protect public health.

As I begin my scientific comments, I want to emphasize that I support the central theme of the proposed legislation, which is to ban asbestos and protect public health. However, in pursing that very appropriate and laudable goal, it is important that we not cause unintended consequences via the legislation that will impact on industries that are not involved in terms of the use of asbestos.

So I have five keys points I would like to bring to you today. Number one, a clear and accurate definition of asbestos and asbestiform minerals, for example, as EPA defined them in 1993, and I have attached my testimony, the direct quote from that EPA document. Two, the importance of the use of validated-and I want to emphasize validated, reliable-test methods for the collection of samples, and then sample preparation and processing and analysis that specifically identified asbestos and asbestiform minerals while also distinguishing them from non-asbestiform materials in a mixed-dust environment as generally found in mines and quarries.

Three, as a staring point, it is appropriate to maintain the existing Toxic Substances Control Act threshold limit related to asbestos with provisions for change in the threshold limit when justified by new scientific findings indicative both of need to define the threshold level as a risk-management tool to protect public health, as well as an ability to put in place lower limits that can be reliably used in practice.

Fourth, it is crucial that any legislation that is enacted recognize the unique physical characteristics of asbestiform materials that

cause them to pose a health hazard as contrasted with the physical characteristic of non-asbestiform materials that may have a similar chemical composition but in a non-fiber form do not pose a health hazard like that of asbestos. This difference between asbestiform materials that are hazardous and rocks that are not hazardous is apparent from consideration of figure 1, which I have attached to my testimony.

Five, the potential impact of misclassifying ordinary rocks as being asbestos-like is apparent from considering figure three. As even a cursory view of this map will indicate, much of this country is covered by these minerals. I can point to where I was born in the State of Minnesota, point to my good friend's neighboring state, Arizona, New Mexico, where I live today, and you will see much of the Western U.S., areas in the East that are covered with these minerals.

In avoidance of their health risk, it is also important that those risk-management procedures not inappropriately impact on the use of non-asbestiform minerals that do not pose a health hazard like asbestos. Thank for your attention, and I look forward to addressing your questions later.

[The prepared statement of Mr. McClellan follows:]

STATEMENT OF

Roger O. McClellan
Advisor, Toxicology and Human Health Risk Analysis
Albuquerque, New Mexico

Before the

House Subcommittee on Environment and Hazardous Materials
House Committee on Energy and Commerce

Legislative Hearing on S.742 and Draft Legislation to Ban Asbestos in Products

February 28, 2008

Good Morning, Mr. Chairman, Ranking Minority Member and Members of the Subcommittee. Thank you for the invitation to present my views on S.742 and Draft Legislation to Ban Asbestos in Products. It is an honor and privilege to again have the opportunity to testify to this Committee on the scientific basis of important proposed legislation.

My biography is attached to this statement (Attachment 1). Since 1999, I have served as an Advisor to public and private organizations on issues related to air quality in the ambient environment and workplace drawing on more than 45 years of experience in comparative medicine, toxicology, aerosol science, and risk analysis. Prior to 1999, I provided scientific leadership for two organizations, the Chemical Industry Institute of Toxicology (now the Hamner Institute) in Research Triangle Park, NC and the Lovelace Inhalation Toxicology Research Institute (now the Lovelace Respiratory Research Institute) in Albuquerque, NM, that earned an international reputation for developing scientific information under-girding occupational and environmental health standards.

The testimony I offer today also draws on my experience serving on numerous scientific advisory committees. This has included service on many EPA Scientific Advisory Committees from the origin of the Agency to the present time, including the Clean Air Scientific Advisory Committee (CASAC), which I chaired from 1988 to 1992, and on CASAC Panels that have considered all the criteria pollutants at various times. I have also served on numerous other scientific advisory committees, typically concerned with air quality issues, for other government agencies, the National Research Council/National Academy of Sciences, the Institute of Medicine, and international

organizations such as the International Agency for Research on Cancer and the World Health Organization.

I am a strong proponent of using scientific information to inform legislative and agency policy judgments that are required to protect public health. I am testifying today at the request of an ad-hoc group of associations, including the National Stone, Sand and Gravel Association, Associated Builders and Contractors, National Mining Association, Associated General Contractors, Association of Equipment Dealers, and the Industrial Minerals Association of North America, whose shared concern is the clarity of distinction between asbestiform fibers and nonasbestiform fibers. The opinions I relate today are my own personal scientific views. I wish to make the following points:

(1) I support the central theme of the proposed legislation which is to ban asbestos except for those unique applications for which there are not suitable replacements.

(2) Any legislation purporting to "ban" asbestos should contain the following key elements of the Senate-passed Bill:

(a) A clear and accurate definition of asbestos, and asbestiform minerals, for example, as EPA defined them in 1993. The EPA (1993) definition of asbestiform minerals is shown in its entirety in Attachment 2.

(b) The use of validated test methods for collection of samples and sample preparation, processing and analysis that specifically identifies asbestos and asbestiform minerals while also distinguishing them from non-asbestiform materials in a mixed-dust environment, as they are generally found in mines and quarries. As an example, the study language provided in S.742 seeks to better define such test methods. Further, any

threshold limits related to asbestos must factor into account that asbestiform minerals are a natural part of the human environment..

(c) Maintains the existing Toxic Substance Control Act threshold limit related to asbestos with provision for change in the threshold limit only when justified by new scientific findings indicative of both a need to refine the threshold level as a risk management tool to protect public health as well as an ability for lower limits to be reliably put into practice.

(3) It is critical that any legislation that is enacted recognize the unique physical characteristics of asbestiform materials that cause them to pose a health hazard as contrasted with the physical characteristics of non-asbestiform materials, that may have a similar chemical composition, but in a non-fiber form do not pose a health hazard. This difference between asbestiform materials, that are hazardous, and rocks, that are not hazardous, is apparent from consideration of Figure 1. The photographs in the first and third column are of six minerals known commercially as asbestos. The unique physical structure with bundles of long, thin flexible fibers is readily apparent. These fibers, when inhaled, cause respiratory disease and are universally viewed as being hazardous. The ordinary rocks of the same chemical composition are shown in the second and fourth columns. These rocks do not break up into fibers, rather they break up into fragments of varied size. Some of the rock fragments are elongated and are called cleavage fragments. Inhalation of the non-asbestiform material, including cleavage fragments, is not associated with development of diseases as seen with the fibers. In Figure 2, the difference between the asbestiform materials that cause disease and the rock fragments that do not cause disease is illustrated. The key distinction is the presence of long, thin

fibers for asbestiform minerals. This contrasts with the irregular shape of the fragments of rocks, with even the elongated fragments being quite short and stubby.

(4) The potential impact of misclassifying ordinary rocks as being asbestos-like is apparent from considering Figure 3. The map shows "green areas" where both rare asbestiform minerals and also their more common non-asbestiform counterparts, might be found. As may be noted, these areas are in the mountainous areas of the United States where igneous and metamorphic rock formations are found. The green areas of the map more commonly contain non-asbestiform minerals and, more uncommonly, asbestos. As even a cursory review of this map would indicate, much of the country is covered by these minerals.

Conclusion:

It is clearly important to have appropriate risk management procedures that provide for risk management for control of exposure to hazardous asbestiform minerals and avoidance of their human health risks. It is also important that these risk management procedures not inappropriately impact on the use of non-asbestiform minerals that do not pose a health hazard.

Figure 1

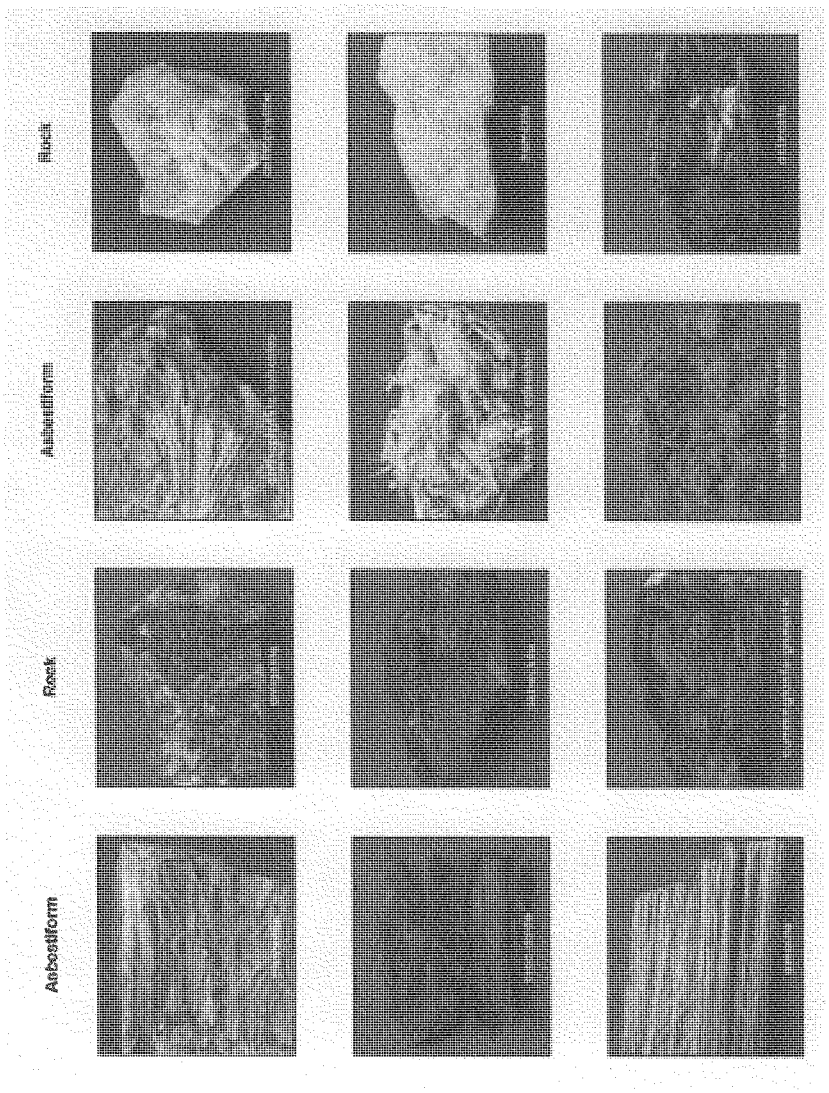
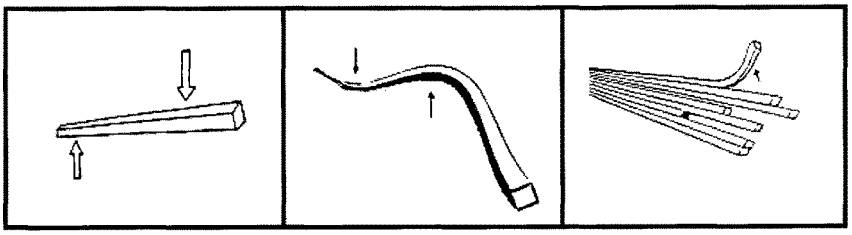


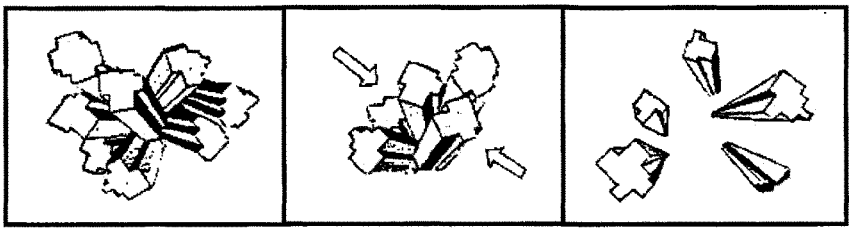
Figure 2

ASBESTIFORM



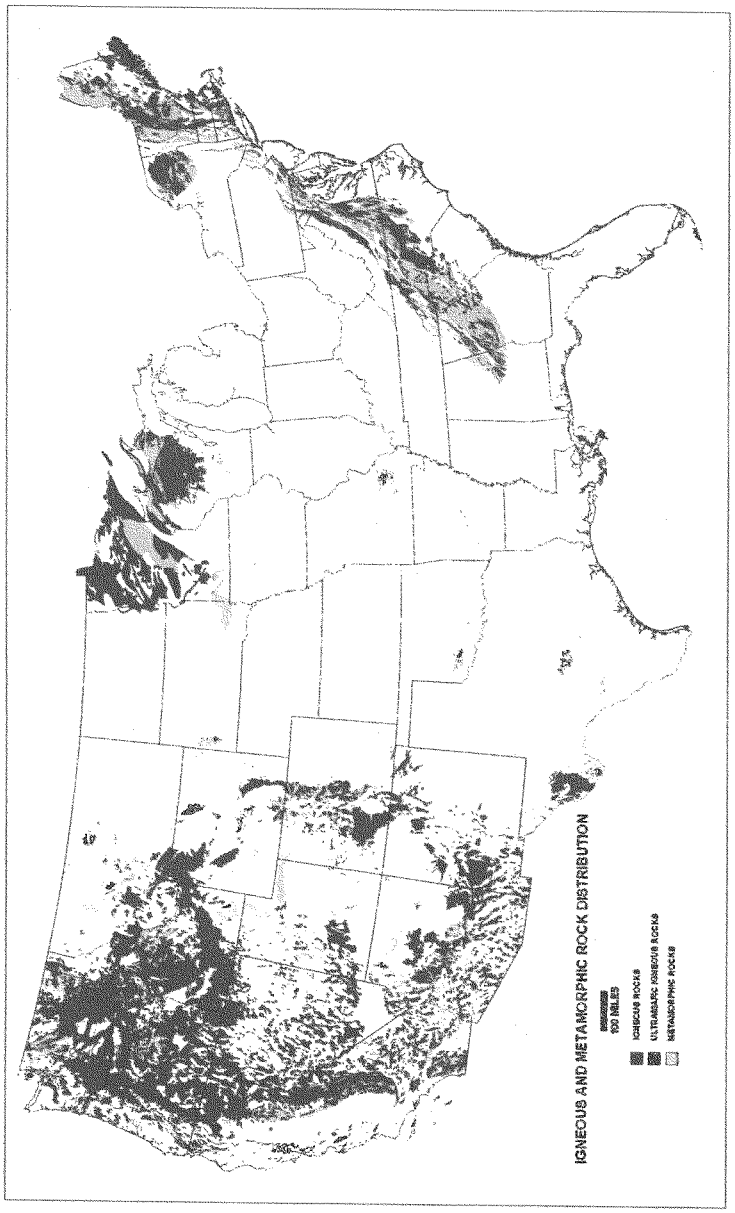
As the drawings above illustrate, asbestiform (asbestos-like) minerals consist of fibers that grow almost exclusively in one dimension, are easily bent and occur as bundles of smaller fibers, which are called fibrils. In fact, the bundling effect of asbestiform minerals is a unique distinguishing feature. Some asbestiform minerals display splayed ends. Asbestiform minerals also are long and thin, with aspect (length-to-width) ratios of typically 20:1 to 100:1 or greater. Most asbestiform fibers are less than 0.1 microns in width, and nearly all are less than 0.5 micron. Individual fibers are only visible with the aid of a microscope.

ROCKS



Unlike asbestiform minerals, ordinary rock-forming minerals grow in several directions at once. Under pressure, unlike asbestiform minerals which bend, ordinary rock-forming minerals fracture easily into particles called cleavage fragments. Of those, some are needle-shaped (acicular), and some show stair-step cleavage patterns. Cleavage fragments tend to be shorter and thicker than their asbestiform counterparts; nearly all have widths that exceed 0.5 microns and lengths below about 10 microns.

Figure 3


IGNEOUS AND METAMORPHIC ROCK DISTRIBUTION
100 MILES
IGNEOUS ROCKS
ULTRABASIC IGNEOUS ROCKS
METAMORPHIC ROCKS

ATTACHMENT 2

EPA Definition of Asbestiform

The following definition is taken from the EPA document "Test Method: Method for Determination of Asbestos in Bulk Building Materials"

Accuracy – The degree of agreement of a measured value with the true or expected value.

Anisotropic – Refers to substances that have more than one refractive index (e.g. are birefringent), such as nonisometric crystals, oriented polymers, or strained isotropic substances.

Asbestiform (morphology) – Said of a mineral that is like asbestos, i.e., crystallized with the habit of asbestos. Some asbestiform minerals may lack the properties which make asbestos commercially valuable, such as long fiber length and high tensile strength. With the light microscope, the asbestiform habit is generally recognized by the following characteristics:

- Mean aspect ratios ranging from 20:1 to 100:1 or higher for fibers longer than 5 μm. Aspect ratios should be determined for fibers, not bundles.
- Very thin fibrils, usually less than 0.5 micrometers in width, and
- Two or more of the following:
  - Parallel fibers occurring in bundles,
  - Fiber bundles displaying splayed ends,
  - Matted masses of individual fibers, and/or
  - Fibers showing curvature

These characteristics refer to the population of fibers as observed in a bulk sample. It is not unusual to observe occasional particles having aspect ratios of 10:1 or less, but it is unlikely that the asbestos component(s) would be dominated by particles (individual fibers) having aspect ratios of <20:1 for fibers longer than 5 μm. If a sample contains a fibrous component of which most of the fibers have aspect ratios of <20:1 and that do not display the additional asbestiform characteristics, by definition the component should not be considered asbestos.

Asbestos – A commercial term applied to the asbestiform varieties of six different minerals. The asbestos types are chrysotile (asbestiform serpentine), amosite (asbestiform grunerite), crocidolite (asbestiform riebeckite), and asbestiform anthophyllite, asbestiform tremolite, and asbestiform actinolite. The properties of asbestos that caused it to be widely used commercially are: 1) its ability to be separated into long, thin, flexible fibers; 2) high tensile strength; 3) low thermal and electrical conductivity; 4) high mechanical and chemical durability, and 5) high heat resistance.

Mr. WYNN. Thank you for your testimony. Dr. Nolan.

STATEMENT OF ROBERT P. NOLAN, INTERNATIONAL ENVIRONMENTAL RESEARCH FOUNDATION

Mr. NOLAN. Thank you. I want to say I am very familiar with the health effects associated with the inhalation of asbestos, having been born in Paterson, New Jersey, where an asbestos factory produced insulation for U.S. ships in the Second World War. As I was growing up in the 1960s, sufficient time had passed that several of my neighbors who had worked decades earlier in this factory and developed asbestos-related disease. More than twice as many people died from asbestos-related disease in Paterson, New Jersey than in Libby, Montana upon the occupationally exposed.

I took a serious interest in understanding how and why this happened. I joined Dr. Irving Selikoff's group at Mount Sinai School of Medicine in New York. At the time, he was a world leader in asbestos research and a long-time resident of New Jersey. I also shared his opinion that a ban of asbestos was not necessary and it was an old idea that had been seriously considered and rejected when it was found not to be supported by the facts. I have a doctoral degree in chemistry, and I am a member of the faculty of both chemistry and environmental science in the City University of New York's graduate center. I also want to put in a kind word for the Fifth Circuit Court of Appeals. I think the decision had a lot more wisdom in it than people might think. And I pick out their key phrases that the EPA filed to muster substantial evidence, and I believe that that standard still has not been met. There is not substantial evidence for this.

I support much of what Dr. McClellan said. I think it is very important that if you are going to ban asbestos that you ban asbestos minerals, and you be very careful that you mineralogically correctly define what you are doing. I was criticized a little earlier by one of your colleagues concerning OSHA. OSHA does not regulate non-asbestos fibers in a rulemaking in 1991, and I will produce that rulemaking for you and specific quotes that support the statement that was read from my testimony.

And I also somewhat agree with the richterite, winchite, and erionite idea. Erionite is a fibrous zeolite. It has never been referred to as asbestos. It can occur with an asbestiform morphology, and it is a group 1 carcinogen, according to IRAC, but an erionite related mesothelioma has never been reported in the United States.

Now, if you want to include winchite and erionite and richterite in the ban, I would ask you to put asbestiform as a modifier so that you specifically focus on that material.

Dr. McClellan covered some of the other points that I wanted to make, but I want to make two very specific points. You talked about the 1 percent limit of detection, whether it is 1 percent asbestos. Now, you may not be aware of this, but an asbestos ore that is beneficiated from mining is 2 to 4 percent asbestos. So a low-grade asbestos ore would be 1 percent asbestos. One percent asbestos is visible in the rock. It was not an analytical method that determined the limit of detection was 1 percent asbestos. Asbestos develops in the cracks of dilated rock, and seams of asbestos at 1 per-

cent are visible in the rocks. There are very few rocks in the United States that are 1 percent asbestos. There are very few materials that are 1 percent asbestos. As Dr. McClellan brought out, you really need to know how much fibers are liberated from this. You need air monitoring. And contrary to what you heard earlier, this is what the Inspector General complained about at the World Trade Center in New York and at Libby, Montana, that they did not have a health-based standard, and they are still not doing that, and there are two Inspector General reports that are referred to in my testimony.

Now, the other thing that I would ask the committee to do is the number of asbestos-related diseases that occur in the United States has been bantered around for decades. At one time, NCI and NIH claimed 2 million Americans would die over 30 years. That would have ended in 2008. It is 66,000 deaths per year. Several of your committee members mentioned 10,000 asbestos-related deaths per year this morning. I would challenge that figure. That is not a Government figure, and if you look at the number that NIOSH actually produced for the hearing that they had in the Senate, the number of mesothelioma deaths is about 2,500 per year, and they are claiming about 1,400 asbestosis deaths, and they didn't specify how many lung cancer deaths.

The Environmental Working Group is not a Government agency, and I try to rely on Government statistics for this, and I would like the committee to request NIOSH or NCI to give them what is an accurate estimate for asbestos-related disease in the United States today.

And the one other thing that I want to make clear, one American male in 600 will die of mesothelioma. That is 0.17 percent. There are 2002 deaths in the three large chrysotile cohorts in the United States, Charlestown, South Carolina, the cement workers in Louisiana, and friction-product workers in Connecticut. In that group, there are three mesotheliomas. Their percent of mesothelioma is 0.15 percent. It is lower than the general population. Now, I am not saying that chrysotile doesn't cause disease, but mesothelioma is not associated with chrysotile exposures.

Thank you.

[The prepared statement of Mr. Nolan follows:]

Testimony of

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On the

Legislative Hearing on

S. 742 and Draft Legislation to

Ban Asbestos in Products

Subcommittee on

Environment

And Hazardous Materials

February 28, 2008

Summary

1. *Definition of asbestos and the best analytical method for assessing exposure in aggregate products.*
2. *History of the asbestos ban in the United States.*
3. *Asbestos exposures in the US have changed.*
4. *What has changed to justify the US legislation to ban asbestos now?*
5. *Historical legacy from high exposure and amphibole asbestos.*
6. *What are the risks of asbestos-related cancer with the controlled use of chrysotile asbestos?*
7. *Risk assessment is also useful for predicting the total number of asbestos-related deaths associated with a public health policy of controlled use of chrysotile asbestos.*

I am writing to share my views concerning the legislation proposing to ban asbestos in America. I am very familiar with the health effects associated with the inhalation of asbestos having been born in Paterson, NJ, where an asbestos factory produced amosite asbestos insulation for US Navy ships in the Second World War. As I was growing-up in the 1960s sufficient time had past for some of my neighbors (who had worked in this factory decades earlier) to develop asbestos-related diseases. More than twice as many people died from asbestos-related diseases in Paterson, NJ, than in Libby, Montana.

I took a serious interest in trying to understand how and why this happened. I joined Dr. Irving J. Selikoff's research group at Mount Sinai School of Medicine in New York City. At the time, he was a world leader in asbestos research and a long time resident of New Jersey. Also, I shared his opinion that a ban of asbestos was not necessary and it is an old

idea which has been seriously considered and rejected when it was found not to be supported by the facts. I have a doctoral degree in chemistry and a member of the faculty in both Chemistry and Earth and Environmental Sciences of the The Graduate School and University Center of the City University of New York.

Definition of Asbestos and Analytical Method for Assessing Exposure

The definitions of asbestos used in the legislation to ban asbestos are not specific enough (as written S.742) to apply only to asbestos and therefore the ban would include other non-asbestos fibers. These non-asbestos fibers are described as being "elongated mineral particles" and "biopersistent" occur very commonly in nature and should not be included in an asbestos ban. The U.S. Occupational Safety and Health Administration (OSHA) does not regulate these non- asbestos fibers after having a rulemaking to determined they do not present health hazards similar to asbestos. I would recommend the deletion from the legislation of the "elongated mineral particles" and "biopersistence" so the ban specifically addresses the commercial asbestos minerals.

Three other minerals are referred to by name in S.742 to be included in the ban, none of which has ever been regulated as asbestos – richterite, winchite, and erionite. The International Agency for Research on Cancer (IARC) has determined fibrous erionite is a human carcinogen (Group 1), but there has never been an erionite-related mesothelioma reported in the United States. The two other "durable fibers" mentioned are richterite and winchite, neither of which is classified as Group 1 by IARC. It has been known for decades that these minerals are present in the vermiculite deposit at Libby, Montana. Neither of these two fiber-types has ever been regulated as asbestos by OSHA. The predominant fiber in Libby is tremolite-actinolite asbestos. If these other three minerals

are to be including in the ban they should be referred to as "asbestiform erionite", "asbestiform richterite", and "asbestiform winchite".

The ban asbestos legislation calls for banning minerals or products, which contain asbestos "in any concentration". Modern analytical methods can identify extremely low concentrations of mineral fiber present in ore deposits, which may or may not be asbestos. The health effects of asbestos have historically been controlled by monitoring the concentration of airborne fibers, assuming all health effects arise from the inhalation of the asbestos.

There is no generally accepted method of predicting airborne fiber levels from the concentration of asbestos in an ore body. This approach becomes even move problematic as the fiber concentration in the bulk material decrease to 0.25% as described in the Committee Print for the aggregate products. The asbestos ban legislation as written may cause the presence of asbestos at low concentrations to be claimed where it is not present (Langer *et al.* 1991). I would recommend that the concentration of airborne fiber levels be used to monitor the workplaces where aggregate is produced, transported, and used. The Committee Print should eliminate the request for the Administrator to develop an "Asbestos Test Method" and not set a limit on the asbestos content of aggregate.

It is important to note that US consumption of aggregate is approximately 3 billion tons per annum and the suggestion that sampling methods be established to determine this amount of rock is less than 0.25% asbestos is not a scientifically justified approach to this problem. What is of interest is the exposures associated with the life cycle of this product. Particularly in the aggregate industry which has a long history of production with no suggestion of increased risk of asbestos-related disease.

An asbestos ban will not address the issues related to asbestos outcropping in areas of the country (often incorrectly referred to as "naturally occurring asbestos") or stop the amphibole asbestos exposures in Libby, Montana. The EPA Inspector General has noticed that EPA has not planned or completed a risk and toxicity assessment for the amphibole asbestos exposures in Libby, Montana, to determine the safe human exposure. The remediation measures in Libby taken to date are not based on a health standard which is the same comment another Inspector General's report made about the air sampling in the area of the World Trade Center post-9/11 (Office of the Inspector General 2006, Office of the Inspector General 2003, Nolan *et al.* 2005). The Ban Asbestos Bill would make managing these types of asbestos exposures (which cannot be eliminated by an asbestos ban) more difficult by falsely claiming no safe level exists.

History of the Asbestos Ban in the United States

The federal government's effort to ban asbestos started with an advanced notice of proposed rulemaking by the US Environmental Protection Agency on October 17, 1979. That year the total US consumption of asbestos was 560,000 tons and about 6.6% was the very carcinogenic amosite asbestos and crocidolite asbestos the balance being the less potent chrysotile asbestos (Hodgson and Darnton 2000). A year prior to the asbestos ban being proposed the National Cancer Institute and the National Institute of Environmental Health Sciences predicted that 2 million premature cancer deaths would occur over the next thirty years from past asbestos exposure or "roughly 17% of the total cancer incidence experienced in that period" (Efron, 1984). This prediction was based on the assumption that *any worker exposed to any type or concentration of asbestos* would have an asbestos-related cancer risk similar to an asbestos insulation workers. This

assumption is incorrect and the predicted numbers of asbestos-related cancer deaths have not occurred but it did drive the regulatory climate at the time leading to a call for an asbestos ban.

On October 18, 1991 the 5th Circuit Court of Appeal vacated EPA's ban because the agency had "failed to muster substantial evidence" to support the rule In 1986 the EPA estimated that a ban on asbestos shingles would "cost $23-34 million to save 0.32 statistic lives ($72-106 million per life)." The 5th Circuit went on to query why EPA would consider asbestos so dangerous if for example "...over the next 13 years, we can expect more than a dozen deaths from ingested *toothpicks*-a death toll more than twice what the EPA predicts will flow from the quarter billion-dollar bans on asbestos pipe, shingles and roof coatings."

The Court of Appeal's decision remanded the matter back to EPA to muster further evidence to support their claim that asbestos exposure constitutes an "unreasonable risk". EPA never provided such additional evidence and many would argue that for chrysotile asbestos it does not exist. The ban asbestos legislation has not addressed any of the Court of Appeal's concerns about mustering substantial evidence. Controlled use of chrysotile asbestos is feasible and it is happening in many parts of the world (Nolan *et al.* 2001). From time to time there are calls for a ban on asbestos but the "substantial evidence" the 5th Circuit asked for to show that controlled asbestos exposure presents an "unreasonable risk" is not available and arguments have been offered that such evidence does not exist (Wilson *et al.* 2001).

Asbestos Exposures in the US have Changed

In the 1970s when all the commercial asbestos fiber-types were being used in the United States, asbestos consumption was above 500,000 ton per year and the permissible asbestos exposure level (PEL) was 12 fibers/ml (equal to or great than 5 microns in length) an asbestos ban may have been justifiable. Since the U.S. Occupational Safety and Health Administration began to regulate asbestos in 1971, we would like to point out the events that have occurred to eliminate any scientific justification for an asbestos ban in the United States.

The permissible exposure limit (PEL) has been reduced to 0.1fibers/ml or 120-fold lower than the 1971 asbestos standard and hundreds of times lower than the historical high asbestos exposure levels associated with asbestos-related disease (Figure 1). The current US permissible exposure level for asbestos is among the lowest in the world. The statements that appear in the Ban Asbestos Bill indicating the current US permissible exposure level is not safe are not supported by reference to the medical and scientific literature and I would argue that such support does not exist (Nolan *et al.* 2001).

Asbestos-related disease in the United States can be divided into three different time periods: a historically high exposure period that resulted from poorly controlled use of asbestos from which our knowledge of the asbestos-related diseases is derived. This historical period ended with the Occupational Safety and Health Administration (OSHA) promulgating an asbestos permissible exposure limiting (PEL) in 1971, next followed a transition period when occupational asbestos exposures were lowered. The transition period ended in 1994 when the current 0.1f/mL permissible exposure limit for asbestos was adopted beginning the modern period of controlled asbestos use (Figure 1).

The latency period (from first asbestos exposure during the historical period to the development of asbestos-related cancer) *is* at least 15 years and in epidemiology studies it is generally 20 to 25 years before significant increases in asbestos-related cancers occur. Most, if not all, of the asbestos epidemiology studies analyzed the health outcomes of workers exposed to asbestos before 1971.

In their testimony before the Senate, NIOSH indicated a continuing interest in asbestos-related disease among a cohort of South Carolina textile workers. The plant opened in 1909 and closed their doors in 1977. The type of asbestos products manufactured in South Carolina are no longer produced or used in the US. Among the 1,841 deaths in the cohort (about 65% of the total workforce), there were three mesothelioma or 0.16% is the same as the general male US population (0.17% see Table 1). One would expect it to be higher due to their chrysotile asbestos exposure.

As a group, the three major US chrysotile exposed cohorts have reported 2,002 deaths with three mesotheliomas (Table 2). The risk of mesothelioma among the males in these three chrysotile-exposed cohorts is less than that experienced by the general males population (Table 1 & 2). In the US one male in 600 dies of a mesothelioma or 0.17% while in the chrysotile exposed cohorts three mesotheliomas occurred in 2,002 deaths or 0.15%. The Relative Risk (RR) is 0.88 (Table 2). Higher RRs for mesothelioma is associated with chrysotile mining and milling where exposures were significantly higher (Table 2).

What has changed to justify the US legislation to ban asbestos now?

Now as we re-visit the ban issue almost 16 years later much has happened to make a complete ban of asbestos in the US an even less attractive public health policy. In 1992 the dangerous amosite asbestos left commerce worldwide to be followed by crocidolite asbestos in 1997 (Figure 2). Crocidolite is the fiber-type first associated with mesothelioma in South Africa. This fiber-type is particularly potent and can cause mesothelioma after low exposure; this observation began the public health concern about non-occupational exposure to asbestos causing cancer (Table 3). Crocidolite asbestos and high exposure to amosite asbestos are the major etiological agents in this disease. Consumption of these two amphibole asbestos fiber-types started to decline in the 1960s and the US incidence of mesothelioma has been declining since the 1990s (Weill *et al.* 2004). These favorable trends are not commonly known or appreciated.

US consumption of asbestos has fallen to 1,500 tons of chrysotile asbestos in 2007 which is less than ¼ % of the consumption in the mid-1970s (Figure 2). Exposures are much better controlled. Most of the chrysotile asbestos the legislation would ban is used in asphalt roofing products that are not regulated by the U.S. Occupational Safety and Health Administration as an asbestos-containing product because there is no evidence of asbestos release from this matrix.

Less than 17% of the countries around the world have chosen to ban asbestos (most after the EPA ban was vacated in 1991) but worldwide consumption has remained in excess of 2,000,000 tons per annum. Most of the asbestos bans were not total but were to ban certain uses of asbestos while other critical uses such as gaskets to contain

corrosive gases, in rocket engines and diaphragms for production of chlorine are allowed. The US Court of Appeal review is unique in that openness of the US Judicial process allowed for an impartial review of a government led asbestos ban. Such an open review of government policy simply does not happen in other countries. To our knowledge the issues raised by the 5th Circuit have never been addressed in any country where asbestos has been banned.

The significantly higher carcinogenic potency of the commercial amphibole asbestos minerals (amosite and crocidolite) compared to chrysotile has been well understood for a many years with the latest quantitative risk assessment by Hodgson and Darnton appearing in 2000 (Table 3). The most recent estimate in the range of potency between crocidolite asbestos and chrysotile asbestos for mesothelioma is 500 to 1. These are large differences and offer an explanation why a single occupational exposure standard based on averaging would not yield an effective permissible exposure standard. More recently after reviewing the epidemiology available for assessment of chrysotile asbestos as a cause of mesothelioma Yarborough 2006 concluded that the "risk of chrysotile for mesothelioma in most regulatory context reflects public policies, not the application of the scientific method as applied to epidemiology studies." Yarborough is not supporting the claim in S.742 that the current asbestos permissible exposure limit does not protect workers.

Historical Legacy from High Exposure and Amphibole Asbestos

The first asbestos exposures in all the other major asbestos cohort studies also began decades prior to the beginning of the transition period in 1971. Due to the long latency for asbestos-related cancers, cases continue to develop from these exposures. Projections

indicate that new cases will continue, in decreasing numbers, until about 2055. These cases are the historic legacy from poorly controlled use of asbestos which some have referred to as the iron grip of latency. Those exposures occurred many years ago and their consequences *cannot be undone* by any legislation or public health action.

Currently, the US is using around 1,500 tons of chrysotile asbestos a year to fabricate a very limited number of asbestos-containing products that release little or no fibers (asphalt roofing, chlorine gas processing, and insulation for the space shuttle). Others and S.742 have tried to justify an asbestos ban by claiming the US is using unlabeled asbestos products; I find no evidence for this and consider their claim false. OSHA and CPSC requires most asbestos-containing products to be labeled as such and OSHA requires exposures since 1994 to be controlled at the PEL of 0.1f/mL.

About 14 years have passed since the current asbestos standard was adopted. Therefore, the latency period is insufficient to observe the mortality experience of modern asbestos workers. Asbestos workers who from high exposures developed asbestos-related cancers were used to parameterize the risk assessment. To understand the trend of asbestos-related disease in the modern period I will rely on a risk assessment and predict the number of future asbestos-related cancer at current exposure level.

What are the Risks of Asbestos-Related Cancer with the Controlled Use of Chrysotile Asbestos?

This question can be answered by doing a risk assessment for asbestos-related cancer.

This risk assessment, which is simple, straightforward and follows principles well established in the last 20 years, should be addressed first. Then, if these risks are unacceptable, you should proceed with banning asbestos. If, on the other hand, the risks are negligible, the time of the people and the Congress should not be wasted. There are already too many unnecessary laws. The cohorts of asbestos exposed workers used to develop the risk assessment were exposed primarily, if not exclusively, prior to 1971 and therefore represent the historic period of asbestos exposure and will be used to predict the future.

I will show that this is an excellent example of how we have learned from our past mistakes and I will argue that we have already taken all the action necessary to avoid a repetition or continuation of hazard from asbestos-related cancer.

Exposure to 0.1f/mL, the PEL since 1994, for 45 years leads to a cumulative exposure of 4.5f/mL x years. In their Senate testimony on June 12, 2007, NIOSH claimed asbestos exposure at the current PEL would cause 3.4 asbestos-related cancers per 1,000 workers over their lifetimes. The NIOSH projection is based on a risk model developed in 1986 that projects average risk for exposure to all three commercial asbestos fiber-types – crocidolite, amosite, and chrysotile used in commerce in the US prior to that time.

Currently only chrysotile asbestos continues to be used in commerce in the US and worldwide. Therefore, to project future asbestos-related cancers I used the asbestos risk assessment developed by Hodgson and Darnton in 2000, which projects cancer risks for the individual asbestos fiber-types. These epidemiologists work at the Heath Safety Executive, an agency of the United Kingdom government and work independently of

both labor and management influence. The overwhelming majority of the public believe asbestos to be a single substance not six different minerals.

These predictions differ from those provided by NIOSH in three important ways:

First, NIOSH's estimates are higher than those for chrysotile asbestos and lower than for the two commercial amphibole asbestos fiber-types. A similar asbestos exposure leads to a significantly lower health hazard for a chrysotile-exposed population than, for a population otherwise identical, exposed to commercial amphibole asbestos. I argue that NIOSH's choice to average the potency of the fiber-types is a significant contributing factor to any asbestos-related disease on workers starting during the transition period (Figure 1, Table 4).

Secondly, our asbestos-related cancer risk due to commercial amphiboles exposure is reported as a range while NIOSH has a single value. This is to mirror the different rates of the lung cancer from amphibole asbestos exposures occurring in the different cohorts of workers. Each cohort is exposed to only one of these two fiber-types. Lung cancer as a function of exposure is similar for the two amphibole asbestos fiber-types, between 10 to 50-fold greater than for chrysotile, NIOSH's prediction lacks this texture (Hodgson and Darnton, 2000).

Third, I assume the workers do not smoke while NIOSH did not say if they smoke or not. The lung cancer risk is 10-fold higher for smokers than those who do not smoke. Exposure to all types of asbestos increases your lung cancer risk as a proportion of your underlying lung cancer risk (Figure 3). Therefore, the lung cancer risk among smokers

for a given asbestos exposure would be greater than in a non-smoker. High cumulative exposures to asbestos can cause a dramatic increase in lung cancer while at low cumulative exposure the dominant risk factor is your smoking habit (Figure 3). With the modern PEL since 1994, the major risk factor for lung cancer is whether you smoke or not.

NIOSH opined that asbestos is the leading cause of lung cancer among non-smokers. It is not clear how they came to this conclusion. Lung cancer risk among non-smokers is about 8 lung cancer cases per 1,000 non-smokers deaths. The increase in the lung cancer risk due to asbestos is calculated as a proportion to the underling lung cancer risk with modern controlled exposures will always be very small about 0.022 lung cancer deaths for 1,000 asbestos workers from a lifetime of asbestos exposure at the modern PEL. Other causes of lung cancer besides tobacco are arsenic, mustard gas [chloromethyl (pyriline) ethers], polycyclic aromatic hydrocarbons, hexavalent forms of chromium, air pollution including fine particles, ionizing radiation and radon (Higginson *et al.*1992).

The fiber-type specific lifetime risk for chrysotile asbestos is more than 50-fold below the NIOSH prediction for exposure to fiber of average potency. NIOSH averages in the higher effects for the amphibole asbestos fiber-types and our calculation provides more texture as to the contribution of the different fiber-types.

At the Senate Hearing NIOSH stated that its goal is to have an upper limit of 1 occupationally-related death per 1,000 worker lifetimes and NIOSH went on to claim that asbestos at the current PEL does not meet that goal (it is 3.4 per 1,000). With the departure of commercial amphibole asbestos from commerce, chrysotile asbestos at the current PEL is about 15-fold below NIOSH's target goal (Table 4). If the asbestos-related

cancers associated with the more potent commercial amphibole asbestos fiber-types are excluded NIOSH's rationale for asbestos regulation falls to the ground.

The more significant risk associated with the amphibole asbestos has been removed from the US by market forces rather than the government taking regulatory action to do so. The proposed ban would not affect amphibole asbestos *currently in place or exposures that have already occurred.*

Predictions for the number of asbestos-related deaths presented at the Senate Hearings are all from exposures that occurred before the modern period. The asbestos-related diseases are currently occurring among individuals whose cumulative asbestos exposures are higher than allowed in the modern period and in many cases were to asbestos fiber-types, i.e. amphibole asbestos, no longer used.

Risk assessment is also useful for predicting the total number of asbestos-related deaths associated with a public health policy of controlled use of chrysotile asbestos.

In 2003 the total number of deaths in the United States was 2,448,250. If all of these people worked with chrysotile for 45 years at the current permissible exposure level of 0.1f/mL there would have been 164 asbestos-related cancer deaths based on our risk estimate for chrysotile of 0.067 asbestos-related cancers per 1,000 deaths.

I know of no one who would argue that the entire US population had such a significant asbestos exposure. So this number of asbestos-related deaths would not be realized.

I estimate at most 1% (24,483) of deaths would have such a high cumulative exposure based on the current US asbestos consumption and uses. It seems very unlikely that 24,483 people would be exposed to asbestos considering its current usage. Therefore, continuing with our policy of controlled use of chrysotile asbestos, once time eliminates the legacy of asbestos-related disease from past exposures, less than two asbestos-related deaths would be expected to occur each year in the United States. The 10,000 deaths in the S.742 are not going to occur from the current US asbestos permissible exposure limit.

As the 5th Circuit Court noted in their opinion striking down EPA's attempt to ban asbestos-containing products that some risks of asbestos-related cancer are similar to choking to death on a toothpick (United States, 1991).

I conclude that in the United States, all the steps required for mitigating the health effects associated with asbestos exposure have already been taken and a ban on chrysotile asbestos will be no more than a symbolic gesture and not have any practical effect.

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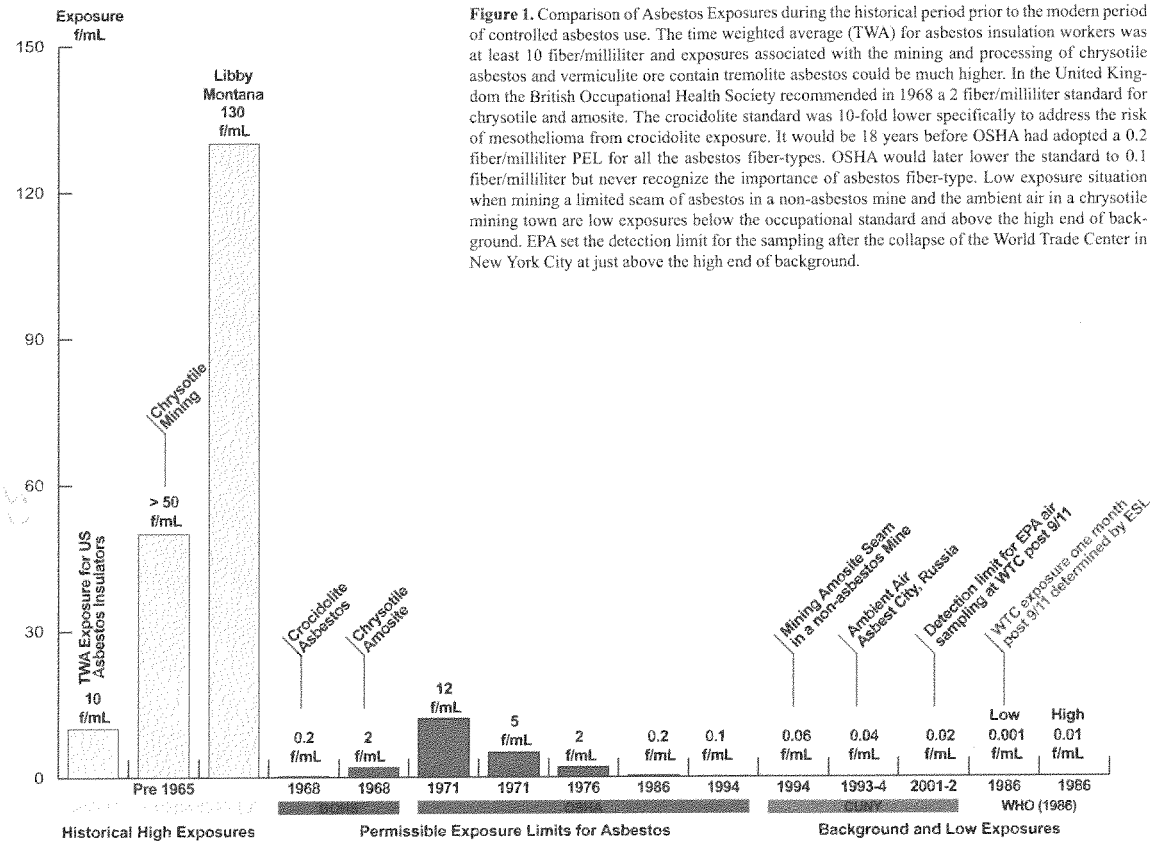

Figure 1. Comparison of Asbestos Exposures during the historical period prior to the modern period of controlled asbestos use. The time weighted average (TWA) for asbestos insulation workers was at least 10 fiber/milliliter and exposures associated with the mining and processing of chrysotile asbestos and vermiculite ore contain tremolite asbestos could be much higher. In the United Kingdom the British Occupational Health Society recommended in 1968 a 2 fiber/milliliter standard for chrysotile and amosite. The crocidolite standard was 10-fold lower specifically to address the risk of mesothelioma from crocidolite exposure. It would be 18 years before OSHA had adopted a 0.2 fiber/milliliter PEL for all the asbestos fiber-types. OSHA would later lower the standard to 0.1 fiber/milliliter but never recognize the importance of asbestos fiber-type. Low exposure situation when mining a limited seam of asbestos in a non-asbestos mine and the ambient air in a chrysotile mining town are low exposures below the occupational standard and above the high end of background. EPA set the detection limit for the sampling after the collapse of the World Trade Center in New York City at just above the high end of background.

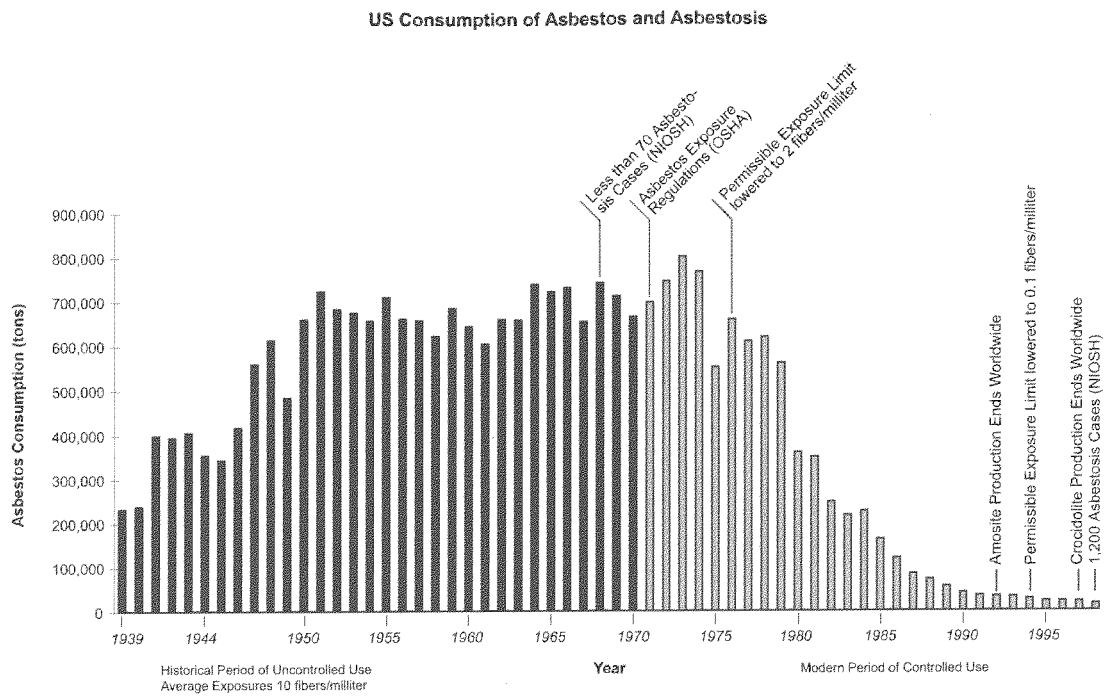

Figure 2. United States consumption of asbestos from 1939 to 1968 was 17,310,187 tons and airborne asbestos exposures were approximately 10 fibers/milliliter for Time Weighted Averages (certain task involved significantly higher exposures). From 1969 to 1998 US consumption of asbestos decreased to 9,523,469 ton and a permissible exposure limit for asbestos was adopted that was reduced to 0.1fiber/milliliter by 1994. Why did the number of asbestosis cases increase from less than 70 in 1968 to around 1,200 in 1998?

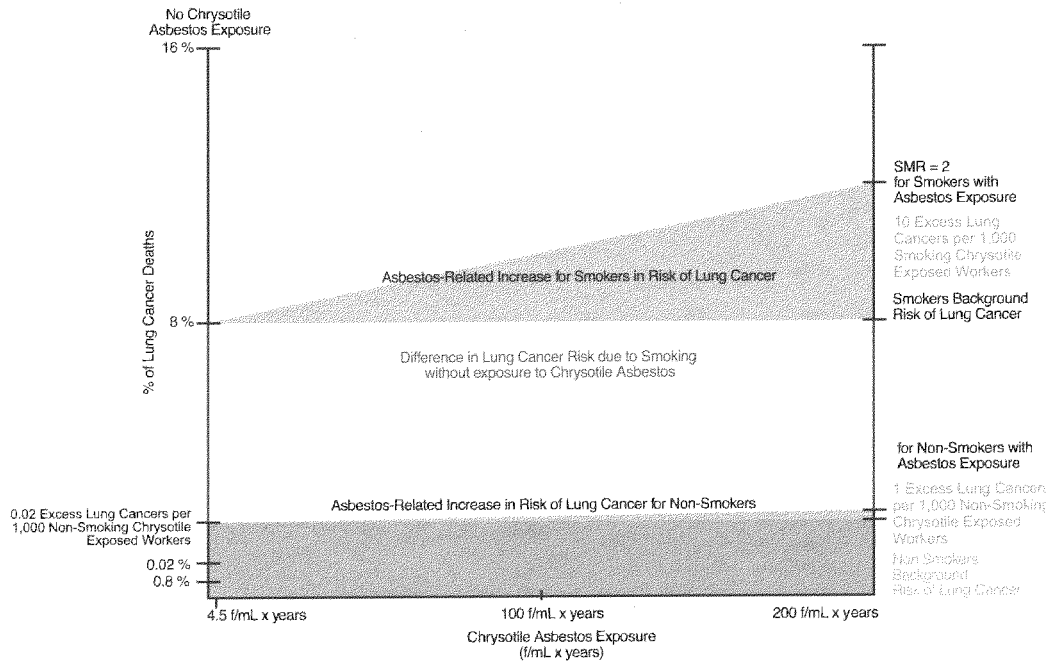

Figure 3. Exposure to asbestos increases lung cancer risk by 0.02 per 1,000 chrysotile asbestos workers with 45 years of exposure at the 0.1 fiber/milliliter asbestos permissible exposure limit. Smokers experience an excess lung cancer risk which is 10-fold greater. In their testimony NIOSH indicated 1 excess death over a working lifetime or less was the target. Approximately 200 fiber/milliliter x years of chrysotile exposure approach 1 excess asbestos-related lung cancer in 1,000 worker.

Table 1. The percentage of deaths due to mesothelioma in the United States in 2003 is given for the general population and the specifically males and females. About 2,560 mesotheliomas occurred in the United States in 2003 where the disease was about 4-fold more common in males than females. 2,448,288 deaths occurred in the US that year with 1,201,964 in males. US males in 2003 are expected to have 1 mesothelioma in 600 deaths. Recently in the US general population mesothelioma accounts for 1 death in 1, 000 deaths in the general population and 1 in 600 and 2,000 for males and females respectively.

Asbestos Fiber-Type	Mesothelioma Deaths Per 1,000 in General Population	Total № of Mesotheliomas/ Deaths (%) §	Average Cumulative Exposure f/ml x Years
United States	**1**	**2,560(0.1%)**	***Bkgd*†**
Males	**1.7**	**2,000(0.17%)**	***Bkgd***
Females	**0.45**	**560(0.045%)**	***Bkgd***

†World Health Organization (1986) estimated the global background for asbestos in the ambient air to be between 0.001 and 0.01 fibers/milliliter and chrysotile is the predominant fiber-type.

§Mesothelioma as a percentage of all deaths.

Table 2. Data for the five chrysotile-exposed cohorts all the mesotheliomas are pleural. General causation for chrysotile asbestos exposure doubling the background risk of pleural mesothelioma is marginal among the Quebec miners and millers. It critically depends upon the estimate of background mesotheliomas. Adding in manufacturing workers makes the evidence weaker.

Fiber type	Name and Location	Mesotheliomas /all deaths (%)	Exposure f/ml x yrs	Risk Ratio Obs fraction /background
	Miners & Millers			
	Canadian Mines	33/7,456 (0.44%)	600	**2.0 (0.44/0.22)**
	Manufacturers			
Chrysotile	**Charleston South Carolina** *Males only in Charleston SC*	3/1,186 (0.25%) §	28	**1.5** (0.25/0.17)
Chrysotile	**New Orleans, LA**	0/259 (0%)	22	**0**
Chrysotile	**Connecticut**	0/557 (0%)	46	**0**
	All Males Manufacturers	***3/2,002 (0.15%)***		**0.88 (0.15/0.17)**
	TOTAL all studies	***39/10,540 (0.37%)***	***170***	**1.5**

§ Hein *et al.*2007 the other data are from Hodgson and Darnton, 2001.

Table 3. Mesothelioma mortality in 10 epidemiologic cohort studies of individuals exposed to crocidolite, amosite, actinolite asbestos and tremolite asbestos where general causation is well established. The average cumulative exposures are from Hodgson and Darnton, 2000 while the Risk Ratios (RR) have been added. Only the cohorts with occupational exposure to amphibole asbestos were useful for establishing causation. The non-occupational cohort studies were either negative or suggestive.

Asbestos Fiber-Type	Cohort Name	Total № of Mesotheliomas/ Deaths (%)	Mean Cumulative Exposure f/ml x Years§	Risk Ratio (>2)
Crocidolite	Miners			
	South Africa(SA)	20/423 (4.7%)	16.4	28(4.7/0.17)
	Wittenoom, Australia	72/719(9.1%)	23	54(9.1/0.17)
	Factory Workers			
	Massachusetts	5/28 (17.8%)	120	104(17.8/0.17)
Summary		***97/1,170(8.3%)***	***53***	**48 (8.3/0.17)**
Amosite	Paterson, NJ			
	Workers	17/740(2.3%)	65	13.5(2.3/0.17)
	Household	4/115 (3.5%)	Unknown	20.5(3.5/0.17)
	Neighborhood	1/780(0.12%)	Unknown	0.7(0.12/0.17)
	Tyler, TX	6/222(2.7%)		16(2.7/0.17)
	Uxbridge, UK	5/333(1.5%)		6(1.5/0.17)
	South African Miners	4/648(0.6%)	23.6	3.5(0.6/0.17)
Summary		***37/2,838(1.3%)***	***47.2***	7.7(1.3/0.17)
Tremolite-Actinolite Asbestos	Miners, Libby, MT†	**12/286 (4.2%)**		**25**(4.2/0.17)
Mean for four amphibole asbestos minerals		**146/4,294 (3.4%)**	***50***	**20(3.4/0.17)**

§Hodgson and Darnton, 2001. † McDonald *et al.* 2004.

Table 4. The lifetime risk from both asbestos-related cancers (lung and mesothelioma) are totaled and shown as the lifetime risk at the current PEL. At the Senate Hearing, NIOSH claimed 3.5 asbestos-related cancers per 1,000 for their asbestos fiber with average potency and opined the target was to get below 1 per 1,000. Note that for chrysotile the lifetime cumulative exposure at the current permissible exposure is about 15-fold below this while the commercial amphibole asbestos fiber-types are between 4.7 and 23.6-fold above the target. NIOSH needs to include the cancer risks associated with the amphibole asbestos fiber-types otherwise their regulatory policy falls to the ground.

Source	Asbestos Fiber-Type	Cumulative Asbestos Exposure	Lifetime Risk of Asbestos-Related Cancer (per 1,000 deaths)
NIOSH	Average for Mixed	4.5 f/mL x years	3.5†
NIOSH-Target			<1
Hodgson & Darnton	Chrysotile	4.5 f/mL x years	0.067(67%)§
Hodgson & Darnton	Amosite	4.5 f/mL x years	4.7-5.6(96%)
Hodgson & Darnton	Crocidolite	4.5 f/mL x years	22.7-23.6(99%)

§Percentage of risk associated with mesothelioma.

† NIOSH estimates are for asbestos-related lung cancer, mesothelioma, and gastrointestinal cancer. I limit this analysis to lung cancer and mesothelioma. Recently the Institute of Medicine concluded that among other cancers historically associated with asbestos a casual relationship is likely only for laryngeal cancer (IOM, 2006). There is no asbestos risk assessment for laryngeal cancer. However, 80-90% of laryngeal cancers are related to alcohol and smoking (Higginson *et al.* 1992), therefore asbestos-related laryngeal cancers are not included in our projections. It is rare disease in women and about 10-fold less common in males than smoking-related lung cancer (Higginson *et al.* 1992).

Mr. WYNN. Thank you very much, Dr. Nolan. Dr. Lemen.

STATEMENT OF RICHARD A. LEMEN, PRIVATE CONSULTANT, OCCUPATIONAL SAFETY AND HEALTH EPIDEMIOLOGY, AND PUBLIC HEALTH

Mr. LEMEN. Yes, my name is Richard Lemen, and I am a retired Assistant Surgeon General of the United States, and I also spent most of my career with the National Institute for Occupational Safety and Health and have been studying the health effects of asbestos for the last 37 years.

It was 31 years ago that the institute that I spent so many years with recommended a revised standard for asbestos, and in that revised standard, it was the first time that I know of any governmental agency saying that only a ban would prevent asbestos-related diseases in the workplace.

I would like to thank Chairman Wynn and Mr. Shadegg and the entire Committee on Environment and Hazardous Materials for the honor of being able to testify before you today. I am here to support the efforts of the both the United States House of Representatives and the United States Senate to ban asbestos in the United States. This ban will represent a monumental public-health achievement for the United States and its citizens in preventing asbestos-related diseases to workers and the public, and I commend the efforts of the United States Congress for their work in this endeavor.

I would disagree a little bit with my colleague Dr. Nolan in that the 10,000 figure is an estimate that was adopted by OSHA in a risk assessment done by another colleague of Dr. Nolan's, Dr. Nicholson at Mount Sinai School of Medicine, so by default, it is somewhat of a government figure because it is mentioned in the hearings and in the testimony to OSHA for their standard.

And also, I might say the only occupationally induced dust disease of the lungs that continues to increase each year in the United States is asbestosis. And this is also true for mesothelioma, which is a signal tumor for exposure to asbestos.

I would also like to say that while this country has experienced in asbestos-induced disease epidemic that continued to grow worse, it is now shifting from the workplace to the non-occupationally expose victims. I would like to provide some data which would shed light on the reasons for keeping the fiber definition that is in these bills. From my years at NIOSH, I know research have found among miners and millers mesothelioma from two counties in Northern New York and new cases continue. We have also seen mesothelioma occurring in the taconite miners in Minnesota, and we have already heard about the experience in Libby, Montana.

Dr. Rohl and Dr. Langer at the Mount Sinai School of Medicine support the idea that substances other than asbestos, like talc, because of its composition, contain conditions of formation and geological occurrence frequently contaminated with asbestos fibers.

I am glad that this bill goes beyond regulatory fibers and includes fibers less than 5 microns in length. I would like to say that a study just published by NIOSH actually shows that fibers shorter than 5 microns in length do cause statistically significant excesses in asbestosis as well as lung cancer. I would also like to say that pathological studies dating back to 1933 show that it is the short

fibers that actually end up in the areas outside of the lung where the mesothelioma is occurring.

I also would like to say that we must continue to rely not on the antiquated analytical methods, but on new and modern methods, and we must take into consideration health considerations and not just analytical consideration.

As far as exemptions, I think I agree very much Ms. Seminario that they should be very limited and carefully thought out, and that they should be based upon health consideration as well as needed use.

I also would like to say that an exception for the chlorine manufacturing industry must recognize the inherent dangers of both the worker and the public from the continued use of asbestos in this industry. New, non-asbestos-using processes are available, and they operate at much less energy than the other processes, by about 15 to 20 percent.

And finally, I have just a few suggestions for the bill. If currently using asbestos in a product at the time of the ban's effective date, it is my suggestion, then, that 6 months only be used for the application and approval for the exemptions, and obviously, as the bill states, nothing can be sold or used during this time period. Second, the disposal requirement doesn't go into place until many years after the ban. This should be shorter. And I would also like to say that I would like to see the bill include a provision for a national survey of extraction activities to find out just how extensive this is and also what are the potential health effects. And finally, I would like to say that I support the EPA's testing. In addition to testing the bulk samples for percentages, they need to test in the under-use conditions and in under-disturbance conditions.

So with that, I would like to conclude my testimony, and I ask that my full comments be added to the record of this hearing.

[The prepared statement of Mr. Lemen follows:]

Extended Comments of Richard A. Lemen, Ph.D., M.S.P.H., Private Consultant in Occupational Safety and Health, Epidemiology, and Public Health

My name is Dr. Richard Lemen and I am a former Assistant Surgeon General of the United States Public Health Service as well as former Acting Director and Deputy Director of the National Institute for Occupational Safety and Health. Currently I am a private consultant and as such, I have testified on behalf of plaintiffs in asbestos litigation. I have researched the epidemiology of asbestos-related diseases for the past 37 years and have consulted extensively on asbestos with United States Governmental agencies, the World Health Organization, and various Governments around the World. I have also written multiple papers in the peer review literature and chapters for textbooks on the epidemiology of asbestos-related diseases.

I would like to thank Chairman Wynn and the entire Subcommittee on Environment and Hazardous Materials

committee for the honor and opportunity to testify today before you. I am here to support the efforts of both the United States House of Representatives and the United States Senate to ban asbestos in the United States. This Ban will represent a monumental public health achievement for the United States and its citizens in preventing asbestos-related disease to workers and the public and I commend the efforts of the United States Congress for their work in this endeavor.

Asbestos is a killer.

It often kills in what appears to be a random pattern affecting one and leaving another unharmed even though they have similar exposures. We do not know why this happens, but it probably has to do with individual susceptibility or other circumstances unknown to science today. We do know that asbestos-related diseases are dose-response diseases and as the dose increases, the risk of developing asbestos-related diseases increases. We also

know there has not been a dose identified below which, some individuals, are not at risk of disease.

As we address asbestos during this hearing, over the next two to three hours, approximately 3 to 4 people will die of an asbestos-related disease. These deaths are preventable.

Unfortunately, these numbers represent only an estimate and are one that is clearly an underestimate, because there are no nation-wide surveillance systems that adequately capture the true nature of asbestos-related diseases. For example, one of our premier surveillance systems, the Surveillance Epidemiology and End Results (SEER) database of the National Cancer Institute (NCI) has found to under-report mesothelioma in some areas by as much as 80%.[1] I am glad these Bills provide language to address these deficiencies so

[1] Pinheiro GA, Antao VCS, Bang KM & Attfield MD, 2004. Malignant mesothelioma surveillance: A comparison of ICD 10 mortalaity data with SEER incidence data in nine areas of the United States. Int J Occup Environ Health: 10; 251-255.

that we will eventually have data to measure the true impact of asbestos and to determine if our public health efforts to prevent asbestos-related diseases are effective.

As we see in countries that have banned or placed strict regulations on the import and use of asbestos the trend of asbestos-related diseases are beginning to slow down.

However, that is not true in the United States, according to the National Institute for Occupational Safety and Health (NIOSH) where asbestosis is the only occupationally induced dust disease of the lungs that continues to increase each year, this is also true for mesothelioma, a signal tumor related almost exclusively with exposure to asbestos.[2]

While this County is still experiencing an asbestos-induced disease epidemic, that continues to grow worse, it is shifting

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[2] McDonald JC, 1985. Health implications of environmental exposure to asbestos, Environ Health Perspect. 62: 319-328; Mullan RJ, Murthy LI, 1991. Occupational sentinel health events: An up-dated list for physician recognition and public health surveillance. AJIM. 19: 775-799.

from occupational to claim non-occupationally exposed victims.

Proponents of continued asbestos usage are trying to influence the regulatory agencies with efforts to exclude some forms of asbestos as well as re-write the definition of asbestos to exclude exposures to non-asbestos materials often contaminated with fibrous forms of asbestos.

It is clear that all forms of asbestos, including chrysotile, the "so-called-safe" form of asbestos, cause all asbestos-related diseases. While chrysotile appears less potent on a fiber-by-fiber basis for the induction of mesothelioma when compared to the other commercial fiber types, the amphiboles, it represents the most commonly used asbestos today and historically represents over 95% of asbestos usage. Chrysotile fibers tend to spit longitudinally as well as partially dissolve, resulting in shorter fibers within the lung.[3]

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[3] Dement, JM & Brown, DP, 1993. Cohort mortality and case-control studies of white male chrysotile asbestos textile workers. J Occup Med Toxic, Vol. 2, No. 4, p. 355.

I am pleased these Bills make no distinction and include all fiber types in the Ban, and recognize the shaky science base for the proposing the continued use of what some say about chrysotile the "so-called-safe" form of asbestos.

I would like to provide data, which will shed light on the reasons for keeping the fiber definition as is in these Bills. From my years with NIOSH, I know researchers have found among talc miners and millers' mesothelioma from two counties in Northern New York and new cases continue.[4] Data also indicate talc miners and millers also experience excess parenchymal fibrosis and pleural changes. Rohl and Langer, at the time from the Mt. Sinai School of Medicine in New York, have stated "Talc because of its composition, conditions of formation and geological occurrence, is frequently contaminated with asbestos fibers."[5]

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[4] Hull MJ, Abraham JL, Case BW, 2002. Mesothelioma among workers in asbestiform fiber-bearing talc mines in New York State Ann Occ Hyg, 46, (Supplement 1):132-135

NIOSH's Dement and co-workers found from one mine and mill, reported by the company to be producing non-asbestiform talc, air samples of 5 fibers/cc as time weighted average (TWA) in six job categories, containing 48% mineral talc, 37-59% tremolite, 4.5-15% anthophyllite, and 10-15% serpentine, lizardite, antigorite. Thus the TWA exposures to asbestiform amphiboles (anthophyllite and tremolite) were found to be in excess of the present U.S. Occupational Safety and Health (OSHA) and Mine Safety and Health Administration (MSHA) occupational exposure standards and that in many mine and mill operations more than 90 percent of the total airborne fibers were less than 5μm in length. "Such short fibers would not be included in a NIOSH count scheme since fibers below 5 microns are not counted even if detected by light microscopy as per assesssument for determining air content of fibers as related to the PEL. [6] Their

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[5] Rohl AN, Langer AM, 1974. Identification and quantitation of asbestos in talc. Env Health Perspectives, Dec., 9; 95-109

[6] Dement J M, Zumwalde RD, Gamble JF, Fellner W, DeMeo MJ, Brown DP, Wagoner JK, 1980. Occupational exposure to talc containing

finding of asbestiform tremolite, anthophyllite and in a couple of samples chrysotile fibers when using Analytical transmission electron microscope (ATEM) as well as PCM in a mine labeled non-asbestiform talc dictates the need for more through and comprehensive analyses and as well as inclusion in the asbestos ban.

The exclusion of fibers less than 5 µm in length is not scientifically justified for three reasons. First, because of the previous definitions excluding fibers less than 5 µm have limited the ability of epidemiology to study populations solely exposed to fibers at these short lengths. This is because the method of choice was the PCM analytical method and was chosen based on its ability to count fibers only and not on a health effect basis.[7] While PCM has been the international

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asbestos-Morbidity, Mortality, and environmental studies of miners and millers. NIOSH Technical Report-DHEW (NIOSH) Publication No. 80-115, Feb.

[7] "The first decision made concerned that part of the dust spectrum which should be counted and it was agreed that only fibers or fiber bundles having a minimum length of 5 microns and a maximum of 100 microns should be counted, the definition of a fiber being arbitrarily taken as a particle whose length was at least three times it diameter. This decision was taken in the light of evidence to the effect that the

regulatory method for analysis, it is not able to detect thin diameter fibers [<0.2μm in diameter]. The evidence suggests that PCM may underestimate exposures and the health risks as found, for example, in the analysis of brake residue,[8] and because of this, the transmission electron microscopy [TEM] should be an adjunct to PCM. Second, a reanalysis by NIOSH of analytical samples previously taken and using the greater than five micron length definition found, when using transmission electron microscope methodology, that on

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particle size distribution or spectrum of an asbestos dust cloud was reasonably constant over a wide range of textile processes, although later work has suggested that this might not be strictly true." This decision represent the conclusions made for use of the Thermal Precipitator Method in collecting asbestos-containing dust and when the Membrane Filter Technique came into use, the basis for the method referred to as the PCM method, it was determined that the 5 micron in length would remain the standard as "The filter on the other hand, having a pore size in the region of 0.45 micron, would appear to be quite adequate for trapping fibers in the length range 5-100 microns." While it was thought the Membrane Filter Technique would be more representative in assessing the "true health hazard to which an operative is subjected" it did not rely upon knowledge that fibers less than 5 micron in length had been shown harmless. Holmes S, 1965. Developments in dust sampling and counting techniques in the asbestos industry. Ann NYA Sciences: 132(1); 288-297.

[8] Yeung, P, patience, K, Apthorpe, L, & Willcocks, D, 1999. An Australian study to evaluate worker exposure to chrysotile in the automotice service industry. Appl Occup Environ Hyg, Vol. 14, No. 7, July, p. 448.

average 90% of the fibers were actually below 5 μm in length.[9] This indicates epidemiology studies using the PCM method only have no basis to imply that only those fibers over five microns were the causative fibers. A new study of the NIOSH cohort of textile workers, predominately exposed to chrysotile asbestos, in South Carolina, has added new information to this second reason. This is the finding, when using TEM analysis, a strong correlation shows ". . . cumulative exposure to all fiber size indices, including fibers ≤5 μm in length, were highly statistically significant predictors of lung cancer or asbestosis mortality." Mesothelioma was not examined as only 3 cases were observed at this period of latency.[10] Third, pathological studies dating back to 1933 have shown that fibers most likely to penetrate into the lung tissue and to move to the areas where mesothelioma occurs are these short

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[9] Dement, JM & Wallingford, KM, 1990. Comparison of phase contrast and electron microscopic methods for evaluation of occupational asbestos exposures. Applied Occ Env Hyg, Vol. 5, p. 242.

[10] Stayner L, Kuempel E, Gilbert S, Hein M, Dement J, 2008. An epidemiologic study of the role of chrysotile asbestos fiber dimensions in determining respiratory disease risk in exposed workers. OEM Online Firs, Published on December 20, 2007, as 10.1136/oem.2007.035584.

fibers.[11] In summary, science has not exonerated fibers below five μm in length from being a health risk and on the contrary, what little science that exists would indicate the opposite.

I would suggest, in addition to the Bills direction that the EPA develops analytical methodologies that they also include NIOSH who has been instrumental in developing the most used analytical methods to date.

Cleavage fragments of asbestos should be included in these Bills. The cleavage fragment of a mineral is comprised of the same chemical composition as the form of the mineral defined by shape as a fiber. Cleavage fragments, in the form of dust, are as readily inhaled as a fiber of the same mineral. The finding of disease including mesothelioma in both New York talc miners and Minnesota iron miners where cleavage

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[11] Gloyne SR, 1933. The morbid anatomy and histology of asbestosis. Tubercule, 14: 447-451; 550-557; July, September; Suzuki, Y. & Yuen, SR., 2002. Asbestos fibers contributing to the induction of human malignant mesothelioma. Ann NY Acad Sci, Vol. 982. pp. 160-176 & Dodson, RF, O'Sullivan, MF, Brooks, DR & Bruce, JR, 2001. Asbestos content of omentum and mesentery in nonoccupationally exposed individuals. Tox Indust Health, Vol. 17, p. 138.

fragments were at issue confirm their need for inclusion in the asbestos Ban bill.[12]

Keep in mind that the potential for diseases to occur from inhalation of fibrous dust or any dust is not just related to its shape. To the contrary, most dust-induced diseases are due to the inhalation of non-fibrous dusts. Certainly fibrous dusts carry some risk for inducing disease once inhaled by virtue of their shape. However increasing numbers of publications have shown that various features associated with the surface and chemical features of inhaled dusts can trigger deleterious chemical events in biological systems such as the formation of charged chemical structures- radicals as well as immune responses that are shown to be harmful to cells in the body.[13] Presently a fiber, for purposes of various counting schemes

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[12] Hull MJ, Abrahm JL, Case BW, 2002. Mesothelioma among workers in asbestiform fiberbearing talc mines in New York State. Ann Occup Hyg, 46 (Supp 1): 132-135; Magnan S, 2007. Mesothelioma in Northeastern Minnesota and two occupational cohorts: 2007 update. Chronic Disease and Environmental Epidemiology, Minnesota Department of Health, December 7, 16 pgs.

[13] Kamp DW, Weitzman, 1999 The molecular basis of asbestos induced lung injury; Thorax. 54:638-652

(NIOSH and AHERA), as defined by its shape, which is not necessarily based on a descriptor of potential for inducing disease. As noted most dusts that cause pneumoconiosis (dust diseases) are not in the form of a fiber. An example of this is silicosis induced by the inhalation of non-fibrous crystalline silica. The fact that, much more is now known about the mechanisms of disease induction from breathing fibrous forms of a given dust since many of the fibrous forms are used in commercial products where human exposures are defined. However, in reality many fibrous dusts of amphibole minerals also contain cleavage fragments of the same mineral. Thus, distinguishing the potential "the various shapes of the inhaled dusts offer", as individual "contributors" to induction of disease from such mixed exposures are difficult to distinguish. The debate as to the distinction of a short fiber from a cleavage fragment, as seen in the light microscope, shouldn't be confused with heath related issues. We do not know what fractions of those mixed dusts are capable of being inhaled and their roles individually or cumulatively may act as contributors to the development of disease in man.

The Senate Bill's exemption of asbestos materials continuing less than 1% asbestos along with the House version that only exempts specific aggregate products containing less than 0.25% asbestos have no health basis and will poses grave risks to workers and consumers using these exempted products. The language should read that the presence of any asbestos, using the most sensitive analytical methods, is indication of contamination and thus banned. Since the prevailing scientific consensus remains that no safe concentration for exposure to any form of asbestos has been identified, setting a percentage concentration or exempting any use as an integral part of a product is contrary to current health-based consensus.[14] If either of these exemptions

[14] Cook MB, 2004. Memorandum: Clarifying cleanup goals and identification of new assessment tools for evaluating asbestos at superfund cleanups. To: Superfund National Policy Mangers, Regions 1-10, United States Environmental Protection Agency, Washington, D.C. Aug 10; Moatamed F, Lockey JE, Parry WT, 1986. Fiber contamination of vermiculites: A potential occupational and environmental health hazard. Env Res, 41: 207-218; Addison J, Davies LST, Robertson A, Willey RJ, 1988. The Release of Dispersed Asbestos Fibres From Soils. Report No. TM/88/14, UDC 553.676.614.7, Institute of Occupational Medicine, Edinburgh, September: 56 pgs; IPCS, 1998. Environmental

remain there will still be persons at risk of developing asbestos-related diseases and will result in less than a ban on asbestos.

The House Bill requires disposal of all asbestos containing products within 3 years but has no provisions for stopping sale or other distribution of these materials. The Bill should call for an immediate embargo of these products upon enactment of the bill with disposal no later than 6 months after the enactment of the bill; or embargoed until approval of application for exemption has been completed. All requests for exemptions must be submitted within 6 months of the Bill enactment.

Any exemption to the Chlorine Manufacturing industry must recognize the inherent dangers for both the worker and the public from the continued use of asbestos in the diaphragm-cell process. New non-asbestos using process are available

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Health Criteria 203: Chrysotile Asbestos, International Program on Chemical Safety, World Health Organization. p. 107.

and can be used and with a reduction of energy requirement of 15-20%.[15] I urge that, if an exemption is granted, it stipulate

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[15] Testimony of Dr. Barry Castleman before the U.S. Senate Committee on Environmental and Public Works, June 12, 2007: Asbestos has long been used in the diaphragm-cell process for making chlorine. This process and the old mercury-cell process are still operated, although a newer and more environmentally and technically superior membrane-cell process has been the only type built anywhere in the world for the past 20 years. Some diaphragm and mercury cell plants have been converted to membrane cells. Power requirements are substantial for chlorine manufacture, and the membrane cell process requires 15-20% less energy than diaphragm cells.

Asbestos exposures in the chlorine industry arise from transport and storage of sacks of asbestos, typically involving tears in the sacks that must be identified and sealed, with spillage cleaned with high-efficiency vacuum filters. Cutting open and emptying sacks of asbestos and transferring asbestos into slurry mixing tanks can cause additional exposures. The empty sacks are an additional exposure source, they must be carefully gathered up, placed in sealed containers, and landfilled at approved sites. Storage and handling of partially used sacks are also sources of exposure. If the slurry is spilled, this has to be meticulously cleaned up right away, because once it dries it becomes a source of airborne asbestos exposure. Handling and storage of prepared or purchased pre-deposited asbestos diaphragms can cause additional exposures. Hydro-blasting for removal/replacement of asbestos diaphragms is another possible source of area contamination, drying, and airborne exposure. The water used for hydro-blasting has to be contained and the asbestos filtered from it. The waste asbestos from this water and the spent diaphragms have to go to a landfill that accepts asbestos.

To some degree, workers can be protected against these asbestos exposures if they wear respirators that will remove some of the asbestos from the air they breathe, and if they wear personal protective clothing such as disposable coveralls. But these safeguards are partial. The respirators must be fit-tested and properly maintained; and even the protective clothing is a hazardous waste that requires special precautions for disposal. Chlorine Institute pamphlet 137, *Guidelines: Asbestos Handling for the Chlor-Alkali Industry*, recommends personal protective clothing and respirators only for workers exposed in excess of the

permitted limits in the OSHA standard, which is all that is legally required. But OSHA has admitted that compliance with its limits will not fully prevent deaths from asbestos. Dr. Richard Lemen and NIOSH epidemiologists estimate that exposure at OSHA's permissible exposure limit for asbestos will still cause 5 deaths from lung cancer and 2 deaths from asbestosis in every 1000 workers exposed for a working lifetime. (L. Stayner et al., Exposure-Response Analysis of Risk of Respiratory Disease Associated with Occupational Exposure to Chrysotile Asbestos. *Occ. Env. Med.* 54: 646-652, 1997).

While company manuals may state that the workers are supposed to observe various precautions to minimize asbestos exposure, there is virtually no OSHA inspection of these workplaces, and the usual combination of production demands, Gulf coast heat and humidity, and carelessness will assure that things are not always done "by the book" to minimize workers' asbestos exposure.

In the past 15-20 years, non-asbestos diaphragms have become available for relatively simple replacement in asbestos diaphragm cell plants. These are sold by Eltech/DeNora and PPG Industries in the US. The non-asbestos diaphragms cost more and last longer than asbestos. Although two-thirds of the chlorine made in the US in 2006 was from diaphragm cells, I don't know how many of these used non-asbestos diaphragms. The technology continues to advance, however, and has had wide acceptance in Europe, where the European Union's temporary exemption allowing asbestos use in chlorine manufacturing comes up for reconsideration next year. I understand that there are only 3 chlorine plants in Europe still using asbestos diaphragms.

PPG Industries has been a leader in the development of non-asbestos "Tephram" diaphragms, and PPG is also a major producer of chlorine in the US. I understand that PPG regularly replaces non-asbestos Tephram diaphragms in its asbestos diaphragm-cell units when they are taken down for periodic maintenance. I do not know of any technical reasons why other diaphragm-cell chlorine manufacturers could not do the same thing.

Therefore, if chlorine manufacturers want extra time to convert to non-asbestos technology, perhaps that could be allowed but with the requirement that when the equipment is shut down for maintenance overhauls, the new diaphragms used be non-asbestos. A similar several-year time frame might be allowed for diaphragm-cell units that manufacturers want to convert to membrane cells.

all Chlorine Manufacturing process shall be converted to non-asbestos usage within 6 years. In addition that during this conversion period that strict controls are in place to reduce the asbestos-exposures to workers at or below the OSHA PEL and air-pollution emissions below existing clean air standards as designated by the EPA.

I would conclude by saying that there are organizations purporting to represent constituencies aimed at curing, treating and preventing asbestos-related diseases while supporting both the Senate passed Asbestos Ban Bill and the exemptions that may be allowed in the current House version, which will result in less than a full asbestos ban and allowing multiple persons to remain at risk of asbestos-related diseases. These organizations are either; not in tune with the current science, or have some other agenda contrary to full prevention of asbestos-related diseases. I urge these organizations to re-think their positions and understand that asbestos-related diseases will never cease without a full asbestos Ban.

I would be happy to answer any questions you may have.

Thank you.

Mr. WYNN. Thank you, Dr. Lemen. Dr. Millette.

STATEMENT OF JAMES R. MILLETTE, EXECUTIVE DIRECTOR, MVA SCIENTIFIC CONSULTANTS

Mr. MILLETTE. Thank you for the opportunity to testify for you today. My name is Jim Millette. I am an environment al scientist. I have been involved with the analysis of asbestos since 1974. I have a degree in physics and a masters in environmental science and a PhD School of Engineering, University of Cincinnati. My work history includes 11 years at the U.S. Environmental Protection Agency, where I was working on method-development for asbestos issues. I teach one of the few courses in the United States on the analysis of asbestos using the transmission electro-microscope. I am currently the chair of the American Society for Testing and Materials. That is ASTM International, Subcommittee D2207, that deal specifically with the development of asbestos methods. And I would like to recognize the gentleman that I took over for, Mike Beard. He and I have worked many, many years, 10 years, on this committee, developing methods using the consensus approach, where we have members from industry, government, individual laboratories, working on developing methods that we agree upon.

My testimony today concerns the U.S. legislation that we have been discussing concerning asbestos. I would like to make five basic points in my testimony. The first is that currently—that is today—laboratories across the United States, commercial and government, are performing analysis for clients using a variety of bulk asbestos methods and reporting levels of less than 1 percent. In the last 35 years, since the EPA initiated the 1 percent level for bulk materials, analytical methods have developed to the point where we can reliably measure less than 1 percent, and we can certainly measure to 0.25 percent, which I feel we can do on a regular, reliable basis.

But there are differing opinions as to the best procedure in which to analyze for asbestos. Because some methods involve different preparation procedures than others. Some involve grinding the sample, and other involve sieving or using other procedures. All of these can be used, but there are differences, and so as you heard before from Mr. Meeker, if you send a sample to two different laboratories, they may not come out with exactly the same result.

However, there are procedures for measuring asbestos at the 1 percent level, where we now have reliable inter-laboratory comparisons that show fairly consistent results, and so if we decide to go to a less than 1 percent level, I am sure that can be achieved.

I support the provision in the committee print that the Administrator shall issue guidance in establishing the test method for purposes of compliance with this paragraph. I think it is important that the Administrator provide the guidance so that those of us developing methods for the work that needs to be done will all start with the same basic assumptions.

Apart from the questions of quantification of asbestos in bulk samples, the characteristics of what is asbestos must be addressed by the method and then universally accepted by the laboratories analyzing the samples. As we discussed earlier, the difference between asbestiform fibers and cleavage fragments is something that

is in dispute. There is a difficulty not in looking at the obvious situation where you have a rock versus an asbestos fiber, but those situations in the middle where you may have a mixture of fiber sizes, and they clearly overlap.

There are some proposed procedures that are in the scientific literature to distinguish between asbestos fibers and cleavage fragments, but these have not been validated. And the research work that I am conducting in attempting to validate some of these procedures, looking at one particular procedure, we found that over 50 percent of the fibers, if we use this procedure and look at a sample of NIST standard reference materials would be rejected as non-asbestos. That is essentially saying that here is a sample that NIST says is a standard reference of tremolite asbestos, and if you apply this particular proposed procedure to discriminate and eliminate the cleavage fragments, you would essentially eliminate 50 percent of the asbestos fibers in that sample, so work needs to be done to fine-tune that particular area. It is my intention that the committee will find an agreement on the definition of asbestos and will continue to work on the best way to measure its concentration.

I would like to add one further comment. In my review of Dr. Nolan's written testimony, he talked about the best procedure was using air monitoring, rather than bulk analysis. I disagree. I think that bulk analyses are necessary to determine the amount of asbestos in materials. If we don't have something like that, a material such as the CSI box that you see down at the end of the table, we would have no way of determining that that did not meet the regulations.

[The prepared statement of Mr. Millette follows:]

Witness Testimony

James R. Millette, Ph.D.
Executive Director
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Subcommittee on Environment and Hazardous Materials
February 28, 2008 1:30 PM

Thank you for the opportunity to testify before you today. My name is Jim Millette. I am an environmental scientist and have been involved with the analysis of asbestos in many types of samples since 1974. I have a degree in Physics from the University of Dayton in Dayton, OH; a Masters degree from Miami University in Oxford, OH and a Ph.D. from the school of Engineering, the University of Cincinnati. My work history includes 11 years at the US Environmental Protection Agency dealing with asbestos analysis issues. I teach a course on the analysis of asbestos by transmission electron microscopy. I am currently the chair of the American Society for Testing and Materials (ASTM – International) subcommittee D22.07 that deals with the development of asbestos methods.

My testimony today concerns U.S. legislation designed to amend the Toxic Substances Control Act concerning asbestos.

I will make five basic points in this testimony:

1. Laboratories across the US are currently performing analyses for clients using a variety of bulk asbestos analysis methods to report levels of asbestos in concentrations less than 1%.
2. There are currently methods for the analysis of asbestos in bulk samples that can achieve valid measures when the concentration at the 0.25% level. However, there are differing opinions as to the best procedure for the analysis of asbestos because some methods involve grinding or other activities that may not allow information about fiber size that some clients feel is important.
3. I support the provision in the Committee Print that "the Administrator shall issue guidance establishing the test method for purposes of compliance with this paragraph." (page 11, (5)(B) Asbestos Test Method)
4. Apart from the questions of quantification of asbestos in bulk samples, the characteristics of what is 'asbestos' must be addressed by the method and universally accepted by all laboratories analyzing samples. Some proposed procedures to distinguish between asbestos fibers and 'cleavage fragments' have not been validated. In research work that I have conducted using one of the proposed procedures over 50% of the fibers from a sample of NIST Standard Asbestos material were rejected as non-asbestos.

5. The ASTM subcommittee D22.07 is working on developing consensus methods that will address the analysis of asbestos in bulk samples at levels less than 1%. It is my intention that the subcommittee will help to find an agreement on the definition of asbestos and the best way to measure its concentration.

Supplemental Notes.
There are over 30 different "standard" methods available for the analysis of asbestos in a variety of media. The methods include those for determining the amount of asbestos in air, water, bulk building materials, surface dust, carpet, soil and specific product materials such as vermiculite and talc. Some methods, although in draft or interim forms, have become generally recognized and used as standard methods by the analytical community. Governmental agencies such as the Occupation Safety and Health Administration (OSHA), the National Institute of Safety and Health (NIOSH), the U. S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB) and the New York State Department of Health, have promulgated some of the methods. Consensus standards groups such as the American Society for Testing and Materials (ASTM), the International Standards Organization (ISO), and the American Water Works Association (AWWA) have published other methods. A number of methods have gained acceptance after being published in the scientific literature. Which method to use in a particular situation depends on the media to be tested and level of information that is required. The methods are described in more detail in Millette, J.R., "Asbestos Analysis Methods", Chapter 2. In: Asbestos: Risk Assessment, Epidemiology, and Health Effects, R.F. Dodson and S.P. Hammar, Eds., CRC, Taylor&Francis, Boca Roton, Fl. pp:9-38, 2006

Bulk asbestos analysis performed by polarized light microscopy (PLM) methods involves identifying the type of asbestos present and then estimating the relative amount of asbestos in relation to the rest of the bulk sample. The estimates are given in terms of volume percents or, in some cases, area percents. PLM analysts practice with samples of known asbestos percentages until they can visually estimate the values on a consistent basis. The PLM visually estimated asbestos percent values do not necessarily correspond to the weight percent of asbestos in a product. When all the components of a bulk material have similar densities, then the volume percent value is expected to be similar to the weight percent value. However, if the sample contains 12% chrysotile asbestos by weight in a binder of a denser material such as calcium carbonate (limestone) then the PLM analytical result may show 30-40% asbestos by volume. Similarly, if a sample contains 45-50% chrysotile asbestos by weight in a material that contains the same weight of a lighter component such as cellulose (paper fibers) then the PLM analytical result may show 5-10% asbestos by volume. In most building products such as insulation, fireproofing, acoustical plasters and pipe covering where asbestos was intentionally added; the amount of asbestos present is significantly above 1%.

The available asbestos in soil methods can be divided into two groups: those that include a grinding step to ensure homogeneity of the sample and thereby improve the accuracy and those methods that attempt to improve the detection of asbestos in the soil without grinding. The non-grinding methods separate the soil from the asbestos to some extent while maintaining the integrity of the fiber sizes. A new method called the "Comprehensive Soil Method" (CSM) uses sieving and both light and electron microscopy to gather information about the wide range of fiber sizes that may be present in soil samples. The

Comprehensive Soil Method involves wet sieving with 1mm and 250µm sieves to generate 4 separate sub-samples for analysis: Coarse fraction (>1mm), Intermediate fraction (<1mm >250µm), Fine fraction (<250µm) and Decant fraction (the decant water from the coarse and intermediate fractions). Each size fraction, coarse, intermediate, fine, and the decant fraction is analyzed by polarized light microscopy (PLM). If no asbestos is detected in these fractions, the fine fraction is then analyzed by transmission electron microscopy (TEM) to determine if asbestos is present within the sample.

In order to test the CSM, a total of 50 soil samples were spiked with concentrations of 0.1% and 0.01% chrysotile and crocidolite asbestos. Of the 50 samples tested, using three different soils, both crocidolite and chrysotile asbestos were detected in all samples where 0.1% and 0.01% of each type of asbestos was added. The testing also found that fiber length, width and aspect ratio information could be obtained from all the samples.

The accuracy of the Comprehensive Soil Method, as determined by the recovery of the 0.1% asbestos spike, ranged from 110% to 540%. Because it uses the PLM estimating procedures for quantification, the CSM tends to overestimate the amount of asbestos in the way that has been reported for polarized light microscopy methods in the scientific literature. One study of a number of laboratories reported overestimation for bulk asbestos PLM tests of 4 to 5 times for concentrations of 1% asbestos. These accuracy values when calculated according to the equation used in these studies are 300% and 400%. This suggests that the Comprehensive Soil Method at the 0.1% asbestos concentration level has a similar accuracy as the standard EPA bulk PLM method at the 1% asbestos concentration level. The accuracy of the CSM at the lower sensitivity level of 0.01% is poor. This appears to be a basic problem with the visual PLM asbestos estimation procedure. The analyst is able to detect low concentrations of asbestos fibers but the ability to visually estimate the amount is very poor at the lower concentrations of asbestos present.

Mr. WYNN. Thank you for your testimony. I would like to thank all of the witnesses. At this time, the chair would recognize himself for 5 minutes for questions. The first question is to Ms. Seminario, Dr. Lemen, and Dr. McClellan. Do you agree that the 1 percent asbestos threshold is not a health-based number?

Mr. LEMEN. Yes, I do.

Ms. SEMINARIO. Yes, 1 percent is not health based.

Mr. WYNN. Dr. McClellan?

Mr. MCCLELLAN. It is a screening value that is not health-based. To be health-based, you have to have, ultimately, a linkage to what is in the air and to risk.

Mr. WYNN. OK, thank you. Do you agree that the 1 percent is not a risk based number?

Mr. LEMEN. I agree with that.

Mr. MCCLELLAN. As I said, it is a screening level based on analytical considerations and a policy judgment that was put in place by legislation.

Mr. WYNN. Thank you, Ms. Seminario?

Ms. SEMINARIO. It is not risk based.

Mr. WYNN. OK, it is stated that the 1 percent threshold concept was related to the limit of detection for analytical methods available at the time, 1973, and that analytical methods have advanced and improved significantly in the past 35 years.

Mr. LEMEN. I certainly agree that analytical methods have advanced, and we can go much lower than that, and that was the consideration at the time, but it is out of date and antiquated today.

Mr. WYNN. Thank you. Anyone else care to comment? Ms. Seminario?

Ms. SEMINARIO. Yes, I agree that it is a limit that is out of date.

Mr. WYNN. Doctor, I don't want to cut you off. You seem anxious, but you have got to be short.

Mr. NOLAN. Yes, I think that any graphometrical percentage standard is not going to be risk based, whether it is 0.25, 0.01, 2, 1. It doesn't matter.

Mr. WYNN. OK.

Mr. NOLAN. In 1973, it was very easy to determine that something was 1 percent asbestos.

Mr. WYNN. Thank you.

Mr. MCCLELLAN. It is important to recognize that because we have improved analytical techniques does not necessarily mean a screening value—and that is all it can be when you are working with a bulk sample—would be lower, necessarily. It could be higher when it is risk based. That is a determination that would have to be made on a policy basis.

Mr. WYNN. OK, I wanted to ask a couple of questions. Dr. Nolan, you basically just said we shouldn't deal with banning asbestos. Is that correct?

Mr. NOLAN. I have been opposed to a ban of asbestos for a long time.

Mr. WYNN. So that means you would find that that CSI product is acceptable for children?

Mr. NOLAN. I didn't say that. I said——

Mr. WYNN. Well, we are proposing to impose a ban on a product like that. You say you are opposed to bans.

Mr. NOLAN. I would not recommend what exactly happened, that that should be referred to the Consumer Product Safety Commission, and they should make a recommendation. They banned asbestos from paper-mache, from certain kinds of other consumer products. That is fine.

Mr. WYNN. OK, thank you.

Ms. Reinstein, I believe your testimony is that the CPSC hasn't done anything on this issue. Is that correct?

Ms. REINSTEIN. You are absolutely right. Neither the EPA or the CPSC has responded to our multiple faxes and comprehensive packet with all the science. No response.

Mr. WYNN. Ms. Seminario, one of the things I believe you talked about was the need for an expeditious approach to banning asbestos. Comparing the committee print with the Senate bill, do you believe the committee print offers a more expeditious approach?

Ms. SEMINARIO. The committee print would do it statutorily, so you wouldn't have to go through a rulemaking process, so once the Congress decides that is what they want to do, that would be done. So if that is the case, then the question is why wait 2 years? I mean both bills provide for a 2-year period, and I would say just go ahead and do it sooner if you are doing it statutorily.

Mr. WYNN. OK, thank you. Dr. McClellan, you seemed your biggest concern was that we make sure we distinguish between asbestos and non-asbestos particles. Is that an accurate——

Mr. MCCLELLAN. That is correct. I think that is very important.

Mr. WYNN. OK, and Dr. Millette, is it your sense that we have the capability to make that distinction? You seem to have testified that we actually did that.

Mr. MILLETTE. Well, there are several proposed procedures for doing that type of thing. We have not standardized that, and that is something that would have to be done for the compliance method.

Mr. WYNN. Now, the bill provides for EPA guidance, so would it be fair to say that you would advocate that kind of guidance from EPA?

Mr. MILLETTE. That is correct. That would be necessary.

Mr. WYNN. Thank you. I don't have any further questions. At this time, I yield to the ranking member, Mr. Shadegg.

Mr. SHADEGG. Thank you, Mr. Chairman, and I want to begin by saying, Ms. Reinstein, my sympathies to you and your loss, and I commend you for your work. This is an important thing you are doing, and it is important that we try to do it right. There are differences in these two bills, and we need to try to get them right when they finally pass and become law.

To that point, both you and Ms. Seminario, and both the AFL/CIO and Asbestos Disease and Awareness Organization supported S. 742 when it passed. What you find is this is an improvement upon that. Is that correct?

Ms. REINSTEIN. I testified at the EPW committee for a ban of asbestos-containing product. What finally passed the Senate was asbestos-containing material, which we did not support.

Mr. SHADEGG. Well, I have a letter that says you are a signatory group that supported the passage of that bill. Is that letter not correct?

Ms. REINSTEIN. That letter is correct on that date. I was not aware until October 23 that that language had been changed.

Mr. SHADEGG. Fair enough. And Ms. Seminario?

Ms. SEMINARIO. We have supported the legislative efforts in the Senate. As Mrs. Reinstein said, unfortunately in the legislative process, the bill was changed. It was significantly changed to allow for the 1 percent exemption across the board, which we don't think is warranted.

Mr. SHADEGG. It is pretty clear that we have this 1 percent, and I think we have a zero standard. And the question is should it be zero? I mean I have heard a lot of testimony today it shouldn't be 1 percent, but I have also heard the issue that 1 percent is a confusing standard because the 1 percent is 1 percent by weight, and I think there is a lot of testimony that that is not the right way to establish the standard. What the standard should be is not how much is in this glass, but how much will damage me if I ingest it. And I think some people say the answer is zero and the question is, OK, well, then we have a standard of zero.

Let me just move on. Dr. McClellan, as I understand your testimony, you think it is vitally important that we draw the line, essentially between asbestiform materials and non-asbestiform materials, and in the simple language of some of the people in this room who are just trying to speak English, you are talking about rock products that are not fibrous, do not have asbestos form, and asbestos products that have the asbestos form. They have the characteristics of that. Is that correct?

Mr. MCCLELLAN. That is absolutely correct.

Mr. SHADEGG. Now, here is my concern: this legislation says we have got to test every single load that comes out of a sand and gravel operation to see if it is under that 0.25 standard, and yet I think I hear Dr. Millette—and I am going to let him respond to this as well—tell us that, quite frankly, we don't know how to test those, at least there is a huge debate. It is pretty clear when you have a nice, hard rock, OK, that is not asbestos, and then when you have asbestos, that is asbestos. But it gets pretty difficult when you get down to what is in between, and I guess my concern is, just from a practical standpoint, if I am sand and gravel operator, and I go scoop up a load and I go take it over and dump it in the dump truck, it is airborne at that point, and it creates a risk to workers. In Arizona, we have sand and gravel operations near homes, and that might create a risk, but can we practically test every one of those loads, and are we testing that is a serious threat, because that dust is naturally occurring everywhere, or are we imposing a standard that is not economically viable in any form to achieve no health savings. And I will let you, Dr. McClellan, respond to that, and then Dr. Millette and anyone else that would like to.

Mr. MCCLELLAN. Well, I think you grasp the nuances of this very, very well. It is my understanding that in terms of the gravel-related industries, we got about 3 billions tons a year. Now, perhaps a third of that, a billion tons a year, is in those areas we outlined on the map where there might be some element of concern. Obviously, you have to have validated methods. You have got to have an approach that is realistic, and is going to have a positive

health outcome at the end of the day. My colleagues have testified we do not have those validated methods in place today.

Mr. SHADEGG. In fairness, you need some time.

Mr. MILLETTE. The methods that we do have that are standard methods for analyzing for asbestos have been validated and use a definition of asbestos which is very specific, but it includes, or could include, some of these cleavage fragments in it, and so in trying to validate a new method which would distinguish between those two, that is the part that has not been done.

Mr. SHADEGG. Can a sand and gravel operator reasonably test each dump load into each dump truck? Dr. Nolan, I take it your answer to this question would be trying to reach that level of certainty is not needed because the threat doesn't merit it.

Mr. MILLETTE. Correct, and I think it would be similar to the problem at looking at all of the drinking water. For instance, there is an asbestos regulation in drinking water, and there are trillions of gallons that are used through the United States. Every one of those places has to be measured at one point, but then you develop a procedure where you can do it not every time.

Mr. SHADEGG. Right, if the legislation says you are going to do a sample a year, fine. If the legislation says every single dump truck load, I think we are in trouble.

Mr. WYNN. First of all, thank you all for your testimony. I think it has been very helpful today. I would like to ask unanimous consent that the petition that Ms. Reinstein has brought with her be entered into the record.

Also, I would like to ask unanimous consent that the letter from the Center for Occupational and Environmental Medicine, signed by seven medical doctors, urging Congress to swiftly pass legislation be put into the record of this hearing. Without objection, so ordered.

Mr. SHADEGG. Without objection.

Mr. WYNN. Mr. Shadegg, did you have——

Mr. SHADEGG. Yes, I have five citizen letters which have been submitted and reviewed by your staff, which I would like to ask unanimous consent be included in the record.

Mr. WYNN. Without objection so ordered.

Mr. SHADEGG. And I would like to ask that additional studies that are supplied by witnesses that we requested today, which arrive within 5 working days be included in the record as well. We have some earlier witnesses who are there——

Mr. WYNN. We would like to see them. If there are enough days, I think we can try to accommodate that. Did you have any further——

Mr. SHADEGG. My last request would be that members who were not able to be here be allowed the usual 5 days to submit their own statements.

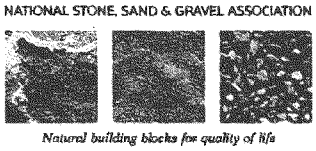
Mr. WYNN. Without objection, so ordered.

Mr. SHADEGG. And if you are going to finish, let me just conclude by thanking the witnesses myself. I appreciate your testimony. It has been very helpful.

Mr. WYNN. Thank you all and we appreciate your presence. Thank you.

[Whereupon, at 2:35 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]



February 27, 2008

The Honorable John Shadegg
Ranking Member
Subcommittee on Environment
& Hazardous Materials
House Committee on Energy & Commerce
2322A Rayburn House Office Bldg.
Washington, D.C. 20515

Dear Ranking Member Shadegg:

As your committee prepares for its hearing on S. 742, the "*Ban Asbestos in America Act of 2007" and the House draft bill to ban asbestos,* the Arizona Rock Products Association and the National Stone, Sand and Gravel Association want to express our support for preventing unsafe exposures to harmful asbestos in America. We support the bipartisan approach in the Senate bill and appreciate the attempt in the House discussion draft to exempt aggregate production from a zero tolerance. However, the approach contemplated in the current draft would appear to require the testing of such massive amounts of material, and require a zero tolerance of naturally occurring asbestos in anything else, that we prefer the approach in S. 742.

In 2006, industry in the state of Arizona produced 13.2 million tons of crushed stone and 83.7 million tons of sand and gravel. Nationally, the aggregates industry produces 3 billion tons of aggregates (stone, sand and gravel) annually in 11,000 operations nationwide. Crushed stone, sand and gravel are a basic construction materials used for roads, housing, commercial and public works construction. Aggregates are also used for erosion control, stormwater drainage management, agricultural and other environmental uses. With a population of over 300 million, every man, woman and child in America "uses" ten tons of aggregate each year. Aggregate is the chief bulk component of asphalt at 94 percent and concrete at 80 percent. It is said that rocks build our cities, our communities, and are the natural building blocks for our quality of life.

Our operations are generally close to market (i.e. population centers) since such volumes are needed that transportation of massive amounts of aggregates from farther away becomes economically impractical. More than 38,000 tons of aggregates, for example, are used for one lane-mile of road. More than 400 tons of aggregates are used in an average home. We are a community-sensitive industry who claim safety and health for our workforce, environmental stewardship and sustainability for our communities as

guiding principles. Our organizations endorse not only clarity in the definition of asbestos but also seek absolute and strict clarity in test methodologies to assure asbestiform minerals are identified and differentiated in the natural mixed dust environment.

Our concern is for clarity and sound science– that in the process of banning the addition of asbestos to products in the U.S., Congress accurately defines the minerals so that common rock fragments are not mistakenly included as asbestiform. Rock fragments, soil, and other crustal materials have been heavily studied and in federal rulemakings and the peer-reviewed published literature, have not been found to cause asbestos-related disease.

Issues

- California created a contested 0.25 percent standard for road construction aggregates in their ultramafic rock formations, which impacts about one percent of all such operations in the state. This standard is under review because it has proved unreliable, and different laboratories are reaching contradictory results when given the same samples. California's Air Resources Board is reviewing their test procedures for the 0.25 percent standard this year. Testing for the presence of extremely low levels of asbestos is difficult, and the current California method is far from perfect.

- The rest of road construction materials as well as all other materials in California and indeed the nation continue to operate under the one percent of bulk material level established by Toxic Substance Control Act (TSCA) rulemaking. Thus a very limited amount of production in one state is impacted by a 0.25 percent standard against the background of everything else in that state and everywhere else in America continuing under the current TSCA level.

- The Senate approach was to continue the TSCA rule's recommended level but to require risk assessment studies to determine whether that is sufficiently protective to human health and to identify test methodologies that would reliably identify harmful asbestiform minerals in the natural, mixed dust environment.

- While we do not believe it is the intent, we believe the effect of the House discussion draft would be disruptive to the economy of the United States by imposing testing requirements on not only 3 billion tons of aggregates but also soils, recycled products, farmland, private and public lands, lands to be developed, any earth to be moved or sold or built upon etc., to prove the negative of zero percent asbestos presence. Asbestos is minute amounts is present in the ambient environment and studies have shown that the presence of asbestos in the ambient environment predates commercial use. Asbestos is a rare but naturally occurring substance.

- Aggregate is a primary ingredient in more than 2 million of the 4 million miles of roads in the U.S. (1.4 millions miles of these roads are unpaved). Our roads, bridges, airports, railbeds, water and energy infrastructure all require aggregates, land

development and earth movement. These foundations underpin our nation's economy. Any disruption in supplies, availability and use would result in taxing a system that is already struggling to keep up with infrastructure needs.

- There are 118,000 workers in the aggregates industry; more than 300,000 day-to-day worker jobs in the asphalt sector and even more in construction that could be impacted if definitions or test methodologies or even tolerance levels unjustified by careful risk analysis and laboratory capacity, delay these foundational industries.

- If the definition of asbestos is overly inclusive and non-asbestiform minerals are classified as asbestos, unwarranted fears could be focused on the safety of our roads and highways, hospitals, schools and even our farms with resulting costs to school districts, homeowners, farmers, transportation districts and loss of jobs. There is no reliable evidence that non-asbestiform minerals cause asbestos-related health effects such as asbestosis, lung cancer, or mesothelioma. We suggest that the term asbestiform should be defined as the US EPA defined it in its TSCA-issued 1993 Bulk Analysis method. This definition is clear, concise, and has a proven track record having been long-implemented.

- Without both proper definition and test protocols for identification of asbestos, it is entirely possible materials on a construction site could be found to contain "asbestos" solely based on asbestos originating in the natural environment.

- Igneous, metamorphic and to a lesser extent ultramafic rock formations underpin about 1/3 of the U.S. land-mass upon which homes, roads, hospitals, rail or schools are built and these major areas of our country can rather commonly contain nonasbestiform minerals but only rarely, asbestiform minerals. Ultramafic rock, along with igneous and metamorphic rock formations, can include both nonasbestiform as well as asbestiform minerals in at least twenty-two of our United States. Ambient levels of asbestiform fibers and a zero tolerance as established in the House discussion draft could wreak havoc.

- Nonasbestiform minerals are common in these particular rock formations. Non-asbestiform minerals are common, and are chemically identical but structurally very different from their asbestiform counterparts, which are relatively rare. Imprecise test methodologies can misidentify nonasbestiform cleavage fragments as asbestiform fibers. Proper test protocols can tell the difference. There is no test protocol currently prescribed nationwide.

- The discussion draft, if implemented, would cause abusive litigation. Naturally occurring asbestos is a geologic reality. Moreover, it is ubiquitous in the environment. A total ban on asbestos, while laudatory in concept, turns a blind eye to the fact that *de minimis* amounts of asbestos will be detectable in products in commerce. Without safeguards in the draft legislation, even trace amounts of naturally occurring asbestos could be subject to unjustified challenge.

Conclusion

We support the Senate-passed bill because it accurately defines asbestos; requires studies to justify any change in the allowable level based on risk, and in the meantime keeps the TSCA threshold levels intact until new studies and regulatory action might suggest any new actions to refine the levels for proper risk management and protection of human health. It bans asbestos immediately upon enactment.

Keeping Americans safe is the ultimate goal of all parties involved in this important debate and it is why these industries supported a bipartisan effort in the Senate. We support regulation of true asbestos exposures that have potential to cause life-threatening asbestos-related disease and with your continued assistance and leadership we hope that asbestos reform is addressed in the U.S. House of Representatives during the 110th Congress. Thank you in advance for your consideration of these views.

Sincerely,

Arizona Rock Products Association
National Stone, Sand and Gravel Association

February 27, 2008

The Honorable Albert Wynn
Chairman
Subcommittee on Environment
& Hazardous Materials
House Committee on Energy & Commerce
2125 Rayburn House Office Bldg.
Washington, D.C. 20515

The Honorable John Shadegg
Ranking Member
Subcommittee on Environment
& Hazardous Materials
House Committee on Energy & Commerce
2322A Rayburn House Office Bldg.
Washington, D.C. 20515

Dear Chairman Wynn and Ranking Member Shadegg:

As your committee prepares for its hearing on S. 742, the "*Ban Asbestos in America Act of 2007*", the undersigned organizations would like to take this opportunity to thank you for addressing this important topic. Like you, we support preventing unsafe exposures to harmful asbestos in America. Our organizations endorse not only clarity in the definition of asbestos but also seek absolute and strict clarity in test methodologies to assure asbestiform minerals are identified and differentiated in the natural mixed dust environment.

Our groups of allied interests, whose members represent a broad spectrum of the U.S. economy, fully support legislation to ban asbestos. We must, however, ensure asbestos is accurately defined so that natural materials, like common rock fragments, are not mistakenly included as asbestos containing products. Rock fragments have been extensively studied and have not been found in either the scientific literature or regulation to cause asbestos-related disease. Arbitrarily including these rock fragments will have a detrimental impact on each of our industries.

If the definition of asbestos is overly inclusive so that other materials are mislabeled as asbestos and therefore suggesting asbestos-like health effects, unwarranted fears could be focused on the safety of our roads, schools, hospitals, and even our farms with resulting costs to school districts, homeowners, farmers, transportation districts and loss of jobs.

Our concern relates to naturally occurring asbestos in the natural mixed dust environment which is the very earth on top of igneous and metamorphic rock formations – about 1/3rd of the U.S. land mass – upon which homes or schools are built. Soils and minerals must be distinguished from asbestiform minerals based on reliable test protocols used to differentiate them and, if necessary, further scientific analysis is necessary to confirm that which already known – that no asbestos-like health effects are associated with nonasbestiform materials.

After painstaking bipartisan efforts over several months to avoid unintended consequences, the Senate bill accurately defines asbestos consistent with the Toxic Substances Control Act (TSCA) and Occupational Safety and Health Administration regulations. Further the Senate bill provides for studies to develop testing methodologies and to conduct risk assessments on various minerals so that the federal government speaks with clarity on what is and is not asbestos, with a risk-based concentration threshold based on sound science.

The Subcommittee discussion draft bill would purport to adopt the California asbestos concentration level of 0.25 percent for aggregates, an enormous reduction from the current TSCA level of one percent by weight without risk-benefit study or study of feasible testing methods and testing laboratory capacity. It is important to note that in California the 0.25 percent test only applies in ultramafic rock formations. The rest of California and the rest of the nation continue to operate under the TSCA rule establishing a 1 percent bulk weight level. In the House draft bill, all land including mined material, farmlands, public or private property as well as soils and all other materials not exempted in the legislation, would be lowered to a zero concentration level.

While we do not have a position on how the 0.25 percent threshold might work as a national standard for any material, we support risk assessment as well as notice and comment rulemaking to assure technical feasibility for consistent and reliable testing at such low levels and for potentially massive amounts of earth and minerals that would suddenly be subjected to analysis under the 0.25 standard based on a test methodology "to be determined."

In the interim we support the Senate-passed bill because it accurately defines asbestos, it requires studies so that any change in the exposure level is based on sound science, and it keeps the TSCA threshold intact until new studies and regulatory action might suggest any new actions to refine the levels for proper risk management and protection of human health.

Keeping Americans safe is the ultimate goal of all parties involved in this important debate and it is why these industries supported a bipartisan effort in the Senate. We support regulation of true asbestos exposures that have potential to cause life-threatening disease and with your continued assistance and leadership we hope that asbestos reform

is addressed in the U.S. House of Representatives during the 110th Congress. Thank you in advance for your consideration of these views.

Sincerely,

Associated Builders & Contractors
Associated Equipment Distributors
Associated Equipment Manufacturers
Associated General Contactors
American Road and Transportation Builders Association
Industrial Minerals Association - North America
Mulch & Soil Council
National Asphalt Pavement Association
National Association of Home Builders
National Mining Association
National Stone, Sand and Gravel Association

Cc: House Energy & Commerce Subcommittee on Environment & Hazardous Materials

CENTER FOR OCCUPATIONAL & ENVIRONMENTAL MEDICINE, P.C.

118 N. WASHINGTON AVE.
ROYAL OAK, MICHIGAN 48067
(248-547-9100)

February 27, 2008

The United States Congress
Washington, DC

RE: **Total Ban of Asbestos in Industrial Materials, Consumer Products and Toys**

Dear Members of Congress,

We, as doctors, scientists, unions and advocacy organizations, agree with the World Health Organization that asbestos causes cancer and other deadly diseases. In addition, thousands of Americans die each year from asbestos-related diseases, and there's no known safe level of exposure to any form of asbestos. We urge you to pass legislation prohibiting the importation, manufacturing, processing or commercial distribution of asbestos-containing products.

The U.S. Senate has unanimously passed S. 742, the Ban Asbestos in America Act, which was revised to gain bi-partisan support and changed from banning asbestos containing products (all asbestos products) to only banning asbestos containing materials (materials where asbestos is present at more than 1% by weight) and does not protect American citizens from asbestos-related diseases.

There is no reputable United States or international health agencies that have been able to identify a safe concentration for asbestos that will protect against the carcinogenic health affects of asbestos. These include: The Department of Health and Human Services, The Office of the Surgeon General, The United States Public Health Service, The Environmental Protection Agency, The Centers for Disease Control and Prevention, The Occupational Safety and Health Administration, The National Institute for Occupational Safety and Health, The American Cancer Society, and others. Internationally The World Health Organization, The International Agency for Research on Cancer, The International Programme for Chemical Safety, The World Trade Organization and some of the major organizations that have concluded that there is no safe exposure to asbestos.

Over 40 countries have banned asbestos, including all European Union and many other countries around the world. The latest countries to announce plans to ban asbestos are South Korea and South Africa. The US EPA tried to ban all major uses of asbestos in 1989, but the regulations were overturned in a court challenge. It now falls to the Congress to shut down what little asbestos use remains in the US economy and close the door to deadly asbestos product imports.

We hereby urge Congress to swiftly pass legislation that institutes an effective and verifiable ban on asbestos.

Sincerely,

Arthur L. Frank, MD, PhD.
Professor, Chair

Department of Environmental and Occupational Health,
Drexel University, School of Public Health
Philadelphia, Pennsylvania

Philip J. Landrigan, MD, MSc
Professor and Chairman
Department of Community & Preventive Medicine
Professor of Pediatrics
Director, Children's Environmental Health Center
Mount Sinai School of Medicine
New York, NY
President, Collegium Ramazzini

Stephen Levin, MD
Medical Director
Mount Sinai - IJ Selikoff Center for Occupational and Environmental Medicine
New York, New York

Michael R.Harbut, MD, MPH, FCCP
Co Director
National Center for Vermiculite and Asbestos-Related Cancers,
Karmanos Cancer Institute, Wayne State University
Detroit, Michigan

Robert Cameron, MD
Co-Founder and Scientific Advisor, Pacific Heart, Lung & Blood Institute
Director, University of California at Los Angeles - Mesothelioma Program
Chief, Thoracic Surgery at West Los Angeles Veterans Association Medical Center
Director, Thoracic Surgery at St. John's Health Center

Not official EPA position-- technical assistance only

EPA Technical Assistance on S. 742
November 2, 2007

- **Sec. 221. Definitions.** – Clarify that definitions in this subtitle apply to Subtitle C as well by rewording opening phrase to read: "In this subtitle and in subtitle C:"

- **Definition of Asbestos-Containing Product** - Sec. 221(2): revise the definition of "asbestos-containing product" to read as follows:

  (2) ASBESTOS-CONTAINING PRODUCT – The term 'asbestos-containing product' means any product (including any part) to which asbestos is deliberately added or used, or in which asbestos is otherwise present in any concentration.

- **Subtitle C** – change the title to read "Prohibition of Asbestos-Containing Products" (delete "Materials") [In fact, throughout the bill, the term "asbestos-containing material" should be changed to "asbestos-containing products".]

- **Definition of Distribute in Commerce** - Sec. 231(2)(A) and (B) exempt certain activities from the distribution in commerce ban, but the limitation of the exemption to "possession" does not appear to be broad enough to capture the range of relevant activities that constitute distribution in commerce, based on the TSCA definition (sec. 3(4)). We are not certain what the intended scope of sec. 231(2)(A) is. With respect to sec. 231(2)(B), we believe it is important to allow the transfer, as well as the possession, of asbestos-containing products associated with their disposal. Using the language from the TSCA distribution in commerce definition, we recommend revising sec 231(2)(B) as follows: replace the words "The possession" with the words "The introduction or delivery for introduction into commerce, or the holding after introduction into commerce," and replace the word "material" with "product."

  Also, in sec. 231(2)(A), replace "material" with "product."

- **Exemptions** -- Sec. 232(b)(1) insert "by rule" after "the Administrator may grant"

- Sec. 232(b)(1)(B) replace with "there is no alternative to the asbestos-containing product that is the subject of the petition."

- **Terms and Conditions** -- Sec. 232(b)(2); Insert at the end after the word prescribe "by rule".

- **Government Use Exemptions** – Give DOD/NASA exemptions directly rather than put EPA in the process. In Sec. 232 (b)(3)(A); replace the intro with the following:

  IN GENERAL.—An exemption from the requirements of subsection (a) shall apply, only to the extent necessary for the critical use(s) described in a certification submitted under section 3(A)(i)) or 3(A)(ii), if the exemption for asbestos-containing products is –

  And delete 232(b)(3)(B).

- **Government Use Exemptions** – Sec. 232(b)(3); add new subparagraph (B) "The certification referred to in (A) above must include a description of the critical use and identify the authorized manufacturer, importer, distributor, and/or contract-authorized user of the exemption on behalf of the DOD or NASA.

- **Diaphragms for Existing Electrolysis Installations** – Sec. 232(b)(4) Throughout this subsection, insert "chlor-alkali" before "electrolysis installation".

- **Diaphragms for Existing Electrolysis Installations** -- Sec.232(b)(4): revise (B)(i) to read as follows:

  (i) IN GENERAL – Not later than 3 years after the date of enactment of this subtitle, and every 6 years thereafter, not to exceed 18 years, the Administrator shall review the exemption provided under subparagraph (A) to determine the appropriateness of the exemption.

  Compliance Testing – Delete Sec. 232(d).

- **Additional technical corrections:** TSCA section 11(a)-(b), which provide inspection authority in Title I need to be amended to add "including products subject to subchapter II or IV of this chapter."

Ernest E. McConnell, D.V.M., M.S. (Path), DACVP, DABT

Telephone/FAX
919-848-1576
toxpathmcc@bellsouth.net

3028 Ethan Lane
Laurdane Est.
Raleigh, NC 27613

25 February 2008

The Honorable Albert R. Wynn
U.S. House of Representatives
2470 Rayburn Building
Washington, D.C. 20515

The Honorable John B. Shadegg
U.S. House of Representatives
306 Cannon House Office Building
Washington, D.C. 20515

Dear Representatives Wynn and Shedegg:

I want to take this opportunity to comment on your proposed legislation to reduce the health risks from exposure to asbestos and asbestos-containing products. I am a veterinary pathologist and toxicologist that has studied the toxicity of asbestos, other mineral particulates and man-made mineral fibers in experimental animals for over 30 years. My original studies were conducted while I was at the National Institute of Environmental Health Sciences (NIH) and dealt with the potential hazards of ingested asbestos because of contamination of drinking water. Later during my tenure as Chief of the Pathology Branch and as the Director of the Toxicology and Testing Program, the primary arm of the National Toxicology Program, I continued with my interest in inhalation toxicology, specifically the potential toxicity of inhaled mineral particulates including several forms of asbestos. After leaving government service I continued my research into asbestos and alternatives to asbestos by advising both government and non-government entities on how to conduct experimental studies of these materials. I also personally participated in most of these studies by examining the histopathologic slides from the fiber exposed animals and participated in the publications that resulted from them. The results of these studies and the work of other researchers have provided me with what I think is a clear understanding of what makes asbestos hazardous. Just as importantly this knowledge also allows me to have an opinion on why many other minerals are not hazardous under normal environmental or workplace exposures.

What makes asbestos hazardous? First, from a toxicity standpoint one cannot think of asbestos as one would a toxic chemical, e.g. benzene. There is a totally different set of principles that dictate the toxicity of chemicals versus minerals. In general, chemicals cause toxicity because of their chemical structure and reactivity with tissues. Normally, they have to be absorbed into the body and then chemically interact with the cells of an organ to cause pathology. In contrast, the chemicals that form asbestos are not inherently toxic and are found in significant amounts within our bodies as a normal part of consuming mineral containing foods. There is a scientific consensus that asbestos causes disease due to four fundamental toxic criteria; dose, dimension, biopersistence and surface activity as discussed below.

A final and absolutely critical feature that makes asbestos hazardous is related to its mineralogy. Asbestos minerals are unique in that they exist as a fibrous form which is an essential property why it was used in industrial applications. When you "grind" an asbestiform rock you produce fibers. It is a subset of very small and thin fibers that result in its pathogenicity. If it were not for this fibrous nature, asbestos would be no different than other non-hazardous rocks.

Dose to the target organ (lung in this case) is the most essential of the four criteria and is determined by the level of exposure in the air. For asbestos to be hazardous it has to be in a form (size) that allows it to reach the deep lung (alveolar portion). If the asbestos fibers are too large they will be filtered out by the nose and airways, similar to any other dust, and will be removed from the body very efficiently by normal physiological processes without causing any disease. Similarly, even if asbestos reaches the deep lung it must remain there for a sufficient period of time, e.g. decades in humans, to cause disease. If the fibers are short, e.g. less than 10 microns in length they will be engulfed by cells (macrophages) that reside in the alveoli and will then be physically carried to the airways where they will again be removed from the body within a few weeks. The only time these "short" fibers become of pathogenic importance is when the exposure (dose) is so large that the macrophages are overwhelmed. If the fibers that reach the alveoli are too long, e.g. greater than the size of the macrophage (~20 microns in diameter) they cannot be removed and over time can cause pathology of various types, e.g. fibrosis and cancer. In addition asbestos fibers can break into even finer fibers (fibrils) in the lung. Interestingly and importantly, in terms of disease producing potential, when asbestos fibers break in the lung, they tend to break in a longitudinal manner producing additional "long fibers", effectively increasing the dose. It is proposed that these long fibers cause pathology over time due to their surface properties. These surface properties, often referred to as "surface activity", cause the body's cells to react to this stimulus by producing various types of chemicals that cause disease and eventually cancer.

Let's now consider the potential hazard of non-asbestiform minerals. While some of these minerals can have an identical chemical make-up as asbestos minerals the potential health hazard from exposure to their dust is entirely different, i.e. relatively innocuous and no more hazardous

than what is termed a "nuisance dust." Why is this? To answer this question one must again consider the four reasons why asbestos is hazardous.

When you break and grind a non-asbestiform mineral a very small portion of the dust can also reach the deep lung so there can be a "dose." However, this dust is what mineralogists call "prismatic" or "cleavage fragments", similar to what one produces when you chip a rock, albeit on a microscopic scale. There are **no fibers of similar structure** as those seen with asbestos. While there are structures that qualify as a fiber using NIOSH counting criteria, in no way should they be called an "asbestos fiber." First, they don't look like an asbestos fiber under a microscope, but rather like "chip." Second, these structures do not exist in the thin and long habit that is associated with producing disease. Almost all of the cleavage structures that can reach the deep lung are fairly thick, e.g. 1-3 microns in diameter and short, e.g. less than 5 microns in length as compared to asbestos fibers which are typically much thinner, e.g. <0.1 micron and longer >20 microns. Hardly any of these cleavage fragments reach a length that would prevent them from being removed from the lung by the macrophage system. Third, when cleavage fragments break, it is always into shorter particulates rather than finer fibers/fibrils of the same length, as is the habit for asbestos. Finally, cleavage fragments probably do not possess the same surface activity as asbestos, although this had not been studied in depth.

In summary, one would not expect non-asbestiform minerals to be any more hazardous than a nuisance dust because the cleavage fragments are not of the right dimension to remain in the lung for a sufficient period of time to produce disease. Therefore, it is imperative that the **definition** of asbestos be absolutely clear and accurate in your proposed legislation and not include non-asbestiform minerals. To include non-asbestiform minerals in the definition of asbestos is not scientifically justifiable.

In this context I, along with a colleague Dr. John Addison, recently published a review of the carcinogenicity of asbestos and non-asbestos tremolite which shows that there is no evidence that non-asbestiform tremolite is carcinogenic (copy attached). We also concluded that other non-asbestiform amphiboles are probably no more hazardous than other silicate minerals widely considered as nuisance dusts. Many of the concepts noted here are described in much greater depth in our paper and may provide you with a better understanding of the science that describes the biological basis for fiber toxicity than I have been able to do here. In particular, I think you would find our discussion on the mineralogical reasons why asbestiform and non-asbestiform minerals would present a different biological hazard to be informative in your deliberations.

Thank you for the opportunity to provide my opinions on this most important piece of legislation. If you have questions please feel free to contact me at the above address.

Sincerely,

Opposition to Senate Bill 742, the Ban Asbestos in America Act

Published by on Feb 27, 2008

Petition History and Background:

Summary Statement of Physicians, Scientists and Occupational/Environmental Professionals Opposed to the Present Version of the "Ban Asbestos" Act, S.B. 742

Petition Text:

February 5, 2008

Dear Member of the United States House,

This letter is written in opposition to Senate Bill 742, the Ban Asbestos in America Act. Sadly, the originators of this statement and many of its cosigners have spent significant parts of their lives working to alleviate the disease and death caused by this family of mineral fibers, but find the present version of this Bill to be so objectionable, that we believe the existing situation is actually better for the American public than that which would be created by this legislation.

Part of the problem involves the definition of what actually constitutes an asbestos fiber, and how many fibers capable of causing cancer and lung scarring can be present in other dusts before those dusts are defined as "asbestos" or an "asbestos containing material." Historically, this definition has largely been the product of economic negotiations and the political process, rather than a consensus or peer-reviewed opinion of physicians, geologists, industrial hygienists and allied scientists.

In the case of Senate Bill 742, it turned out that the toxic fibers contained in vermiculite, taconite and talc are excluded from the ban based on non-health based criteria. Exposure to the toxic fibers in these materials is associated with the causation of mesothelioma, lung cancer and lung scarring in the same fashion as other currently regulated asbestos fibers.

While experts were originally consulted early in the process, their input on these issues was not effectively translated into health protective legislation.

Many experts in the field are also dismayed that an American ban on asbestos would allow fibers defined by S.B. 742 as asbestos to contaminate products ranging from road patch to children?s toys. The predominant scientific consensus is that there is no such thing as a ?safe? level of asbestos. This consensus has been reconfirmed by recent EPA studies which clearly show that an asbestos contamination of materials at levels well-below 1% can result in hazardous exposures when disturbed.

Additionally, this Bill allows for the marketing and promotion of products containing these fibers and similar fibers.

There are other specific issues with the Bill that we would like to see improved (such as the extremely low level of funding for cancer research), but through the process have been willing to compromise on these issues because the number of lives saved by an actual prohibition of asbestos would be considerable.

It is estimated that at least 10,000 Americans die per year from asbestos-related diseases and cancers. This number is expected to rise over the next 10 years and plateau for an unknown period of time after that.

Many physicians and scientists in this field feel that "asbestos" is best defined as any material which causes "asbestos-related diseases and cancers." It is our feeling that the process has become so skewed by the economic, legal and political considerations of asbestos-related diseases, that traditional scientific and medical approaches to the definition of disease and etiology have been discarded in favor of ill-considered political expediency. Science, medicine

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and compassion must be re-integrated into this Bill.

Asbestosis and asbestos cancers are first and foremost causes of disease and death. To allow political expediency to eclipse this reality while authorizing the persistence of a public health danger is not good enough for the American people.

It is our sincere hope that you will contact us for further detail in regard to our objections to this Bill. It is our duty and honor to attempt to help you understand the science, medicine and reality of that which is before you, so that properly worded legislation can be written to ban asbestos in America.

Sincerely,

Michael R.Harbut, MD, MPH, FCCP
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National Center for Vermiculite and Asbestos-Related Cancers,
Karmanos Cancer Institute, Wayne State University
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248.547.9100
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Alan C. Whitehouse, MD, FCCP
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Total signatures 49

#	Title	Name	Town/City	S/C/P	Region	Comment	Date
49	Dr.	L. Christine Oliver	Brookline	MA	N/C	N/G	Feb 20, 2008
48	Mr.	John Gerow	Midlothian	VA	N/C	N/G	Feb 14, 2008
47	Dr.	Cora Roelofs	Lowell	MA	N/C	N/G	Feb 13, 2008
46	Ms.	Carol Giles-Boyar, MPH, CIH	Port Reading	NJ	N/C	N/G	Feb 10, 2008
45	Dr	Jordan Rinker	San Francisco	CA	N/C	N/G	Feb 10, 2008
44	mrs	Catriona Habis	Dundalk	Ireland	N/C	N/G	Feb 09, 2008
43	Dr	Perry Sheffield	New York City	NY	N/C	N/G	Feb 08, 2008
42	Ms.	Alice Freund	Montclair	New Jersey	N/C	N/G	Feb 08, 2008
41	Mr.	David Rizzolo	San Francisco	California	N/C	View	Feb 07, 2008
40	Env. Engineer	Gerard Bailey	Lisbon	Portugal	N/C	N/G	Feb 07, 2008
39	Mr.	Charles Reaney	Media	PA	N/C	View	Feb 07, 2008
38	Ms	Grechen Schmidt	Federal Way	WA	N/C	View	Feb 07, 2008
37	CIH	Michael Horowitz	Oakland	California	N/C	N/G	Feb 07, 2008
36	Ms	Jackie Swagart	Covington	IN	N/C	N/G	Feb 07, 2008
35	Mr	Chad Swagart	Covington	IN	N/C	N/G	Feb 07, 2008
34	Mr	Glenn Swagart	Covington	IN	N/C	N/G	Feb 07, 2008
33	Mrs	Debra Swagart	Covington	IN	N/C	N/G	Feb 07, 2008
32	Assoc Professor	David F. Goldsmith, MSPH, PhD	Washington	DC	N/C	N/G	Feb 07, 2008
31	Mrs.	Sharon Noonan Kramer	Escondido	California	N/C	N/G	Feb 07, 2008
30	Dr	Catherine Inman	La Crosse	Wisconsin	N/C	N/G	Feb 07, 2008
29	Mr.	Herman Hamilton	Walkersville	Md.	N/C	N/G	Feb 07, 2008
28	Dr.	Alan J. Hay	lancaster	PA	N/C	View	Feb 07, 2008
27	Dr.	V. Ramana Dhara	Atlanta	GA	N/C	N/G	Feb 07, 2008
26	Dr.	Kathleen Fagan	Cleveland	OH	N/C	N/G	Feb 07, 2008
25	MD, PhD, professor	Vilhjalmur Rafnsson	Reykjavik	Iceland	N/C	N/G	Feb 07, 2008
24	Dr.	Gary Greenberg	Durham	NC	N/C	N/G	Feb 07, 2008
23	Dr	Larry A Lindesmith	Onalaska	WI	N/C	View	Feb 07, 2008
22	Ms.	Stacey Champion, CIE (Certified Indoor Environmentalist)	Cottonwood	AZ	N/C	N/G	Feb 06, 2008
21	Professor	Phil Brown	Providence	RI	N/C	N/G	Feb 06, 2008
20	Dr.	Steven Field	Tampa	Florida	N/C	N/G	Feb 06, 2008
19	Ms	Deborah Davitt	Baton Rouge	Louisiana	N/C	View	Feb 06, 2008
18	Ms	Angela Babin	New York	NY	N/C	View	Feb 06, 2008
17	Mr	James Dunbarr	Davis	CA	N/C	N/G	Feb 06, 2008
16	Dr.	Karl Kelsey	Providence	RI	N/C	N/G	Feb 06, 2008
15	MR	Jay Herzmark RN	Seattle	Washington	N/C	View	Feb 06, 2008
14	Dr.	Patricia Blackwell	Duluth	GA	N/C	N/G	Feb 06, 2008
13	Dr.	Anne Krantz	Chicago	Ill	N/C	N/G	Feb 06, 2008

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#	Title	Name	Town/City	S/C/P	Region	Comment	Date
12	Dr.	Karen B. Mulloy	Denver	CO	N/C	View	Feb 06, 2008
11	Mr.	Jonathan Klane, M.S.Ed., CIH, CHMM, CET	Fairfield	Maine	N/C	View	Feb 06, 2008
10	Env Health Eng	Albert Donnay, MHS	Baltimore	MD	N/C	N/G	Feb 06, 2008
9	Mr.	Joel Shufro	Brooklyn	New york	N/C	N/G	Feb 06, 2008
8	dr.	eckardt johanning	albany	ny	N/C	N/G	Feb 06, 2008
7	Ms	Laura Linker	NY	NY	N/C	N/G	Feb 06, 2008
6	Dr.	Robert Naparstek	Avon	MA	N/C	N/G	Feb 06, 2008
5	Dr	marian swinker	greenville	NC	N/C	N/G	Feb 06, 2008
4	Dr.	Michael McCann, PhD, CIH	Washington	DC	N/C	N/G	Feb 06, 2008
3	Industrial Hygienist	Lawrence Kalcso	Port Orchard	WA	N/C	N/G	Feb 06, 2008
2	Dr	Ronald Blum MD FAAFP FACOEM	Patten	Maine	N/C	View	Feb 06, 2008
1	Mr.	John Dimos, MS, CIH	Oak Park	Illinois	N/C	N/G	Feb 06, 2008

* N/C - field not collected by the author

* N/G - not given by the signer

* S/C/P - State, County or Province

* View - view

Appendix: All signatures comments

41 David Rizzolo Back to signature list

My career has been devoted to the management of asbestos containing construction materials and naturally occurring asbestos. It now looks like my great grandchildren may be carrying on my work! It is sad to see us repeating the same mistakes over and over again with respect to protecting the public from the hazards of asbestos. How can we ever hope to stop asbestos litigation if we don't ban the asbestos materials. This is very discouraging, but not too surprising.

39 Charles Reaney Back to signature list

As an environmental consultant/IH for 22+ years, I strongly oppose the dilution of the bill in it's present form, and respectfully urge Congress to re-focus on it's original intent to provide meaningful protection to the public from known and proven asbestos exposure hazards, rather than focusing on the economic impact to product producers, and the political ramifications thereof.

Honorable ladies and gentlemen, please serve the public, as the people who elected you believed that you would.

38 Grechen Schmidt Back to signature list

Too many people believe that asbestos has been banned for years. It's time to make that a reality.

28 Alan J. Hay Back to signature list

Legislation should not be inacted which ignors or is contrary to scientific evidence that is accepted by the ovewhelming majority of experts on the issue of the proven harmful effects of asbestos in all forms that are respirable.

23 Larry A Lindesmith Back to signature list

As a pulmonary and occupational consultant and NIOSH certified B Reader since 1984, and retired chairman of pulmonary and occupational medical departments at Gundersen Lutheran Medical Center (WI), I firmly concur with the need to make this legislation scientifically and medically cogent, to actually save lives.

19 Deborah Davitt Back to signature list

Tip o' the hat to principled doctors and researchers who truly have the public's health in mind.

18 Angela Babin Back to signature list

Pleae include vermiculite, talc, taconite and related fibers, as well as products containing less than 1% of asbestos in Senate Bill 742.

As is - this bill would allow hazardous products to flourish - from children's toy's to household materials. I urge you to relook at the issues at hand, and find the way to ban asbestosis and mesothelioma from people's lives.

Thank you,

Angela Babin, M.S.
Occupational Health Specialist/Industrial Hygienist

15 Jay Herzmark RN Back to signature list

My brother-in-law died 6 month ago of asbestosis. He spent his last days in an intensive care unit unconscious on a ventilator. It was a completely needless death. He was 53. All asbestos should have been banned years ago. It is too late for him but not too late.

12 Karen B. Mulloy Back to signature list

Director, Denver Health Center for Occupational Safety and Health
Associate Professor, Univeristy of Colorado School of Medicine

11 Jonathan Klane, M.S.Ed., CIH, CHMM, CET Back to signature list

Owner/Founder/Certified Industrial Hygienist
Klane's Education Information Training Hub
www.trainerman.com

2 Ronald Blum MD FAAFP FACOEM Back to signature list

Any asbestos related exposure is placing our patients and your constituency at risk.

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United States Senate

WASHINGTON, DC 20510

Testimony of Senators Patty Murray, Johnny Isakson and Barbara Boxer
In support of the Ban Asbestos in America Act (S. 742)

House Committee on Energy and Commerce
Subcommittee on Environment and Hazardous Materials

February 28, 2008

Chairman Wynn and Ranking Member Shadegg, thank you for convening this hearing to highlight the importance of banning asbestos in America as soon as possible.

Asbestos is the deadly dust that we have known for years causes untold suffering. Sadly, unlike other types of cancer, so far effective treatment strategies have been elusive for victims of asbestos-related cancers.

Over the last seven years Senator Murray attempted to move a bill to ban asbestos in the US through the Congress, but her efforts were not successful. Senator Murray's bill contained a comprehensive ban on asbestos. Last year we came together and worked on a bipartisan basis to bring a bill before the Senate Committee on Environment and Public Works which was favorably reported out by a vote of 19-0. We then secured unanimous support on the Senate floor for S. 742 last October.

We worked together to ban products containing more than one percent of asbestos because we could achieve this first step with bipartisan approval. Asbestos is deadly, it's devastating our families and communities, and every day we wait to ban any part of its use, we're sentencing more Americans to an early and avoidable death.

Along the way all of us have looked in the eyes of victims and their families and we continue to ask ourselves, "How many more Americans have to die before our government finally does the right thing?" The Environmental Protection Agency tried to ban products containing more than one percent of asbestos in 1989, but a court overturned their action. Our bill reinstates key elements of the EPA asbestos ban overturned by the court.

And we are also motivated by the memory of our former colleague, Bruce Vento. We had the privilege of knowing Bruce as a gentleman and a Congressman from the state of Minnesota. Bruce lost his battle to mesothelioma in 2000, but we continue to be inspired by his loving wife Sue.

United States Senate
WASHINGTON, DC 20510

Her work in concert with the Mesothelioma Applied Research Foundation (MARF) has been critical to the progress we have made thus far. The Foundation's $4 million investment in privately funded grants has helped to motivate brilliant investigators to study mesothelioma. But much more needs to be done.

Victims have been hampered by a lack of adequate treatment – which compounds their suffering. Doctors have been hampered by a lack of research on how asbestos fibers actually cause disease and what treatment strategies work best. Industrial hygienists have been hampered by the lack of research on how best to measure asbestos fibers in the air. These are very basic but important problems that the Senate bill would address.

We have to do the right thing and we have to do it now. It is not just World War II shipyard workers who are suffering. Brake repair workers, asbestos cement workers, asbestos roofing workers, and demolition construction workers are still exposed today. In addition, the **children and spouses** of asbestos workers are being exposed to asbestos fibers carried home on workers shoes and clothes.

We undertook an exhaustive process in the Senate with a number of congressional hearings, hundreds of meetings and negotiating sessions with stakeholders on all sides of the issue. We have produced a truly bipartisan bill that we believe will be signed by the President.

Our bill:

- Prohibits the importation, manufacture, processing and distribution of products containing more than one percent of asbestos;
- Dramatically expands research and treatment by creating a $50 million, 10-center research and treatment network;
- Calls for two studies to assess the current state of the science and to examine and generate scientific evidence to guide the development of regulations that will distinguish those materials that may cause asbestos-related disease, from those that do not; and
- Launches a public education campaign to protect and inform Americans of the dangers of exposure to asbestos and their currently available treatment options.

As a society, the cost of managing asbestos exposures and treating asbestos victims results in huge health care costs, not to mention the emotional toll on the families. With so many alternatives to asbestos now available, it's time for America to take an important step forward in ending exposures that cause deadly diseases.

United States Senate
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Industries all over the world have been phasing out the use of asbestos materials as alternatives have become more widely available. US car manufacturers now tout their use of non-asbestos brakes, as the Japanese and European car companies have done for years. Internationally. chlor-alkili plants are phasing out old asbestos and mercury technology in favor of the more efficient and safe non-asbestos membrane technology. We need to help U.S. companies embrace new, greener technology today.

Conclusion

We again thank the Chairman for calling this important hearing and we look forward to working with all of the Members of the House Energy and Commerce Committee to achieve a bipartisan consensus in this Congress.

We have already lost too many good folks like Bruce Vento: we have a responsibility to protect tens of thousands of people just like him.

UNIVERSITY OF MARYLAND

Department of Geology

February 25, 2008

The Honorable Albert R. Wynn
U.S. House of Representatives
2470 Rayburn Building
Washington, D.C. 20515

The Honorable John B. Shadegg
U.S. House of Representatives
306 Cannon House Office Building
Washington, D.C. 20515

Dear Representatives Wynn and Shadegg:

My name is Ann G. Wylie. I hold a baccalaureate degree from Wellesley College and a PhD from Columbia University. I am Professor of Geology at the University of Maryland. I have spent more than 30 years studying asbestos and the minerals that compose it.

In this statement, I intend to discuss both the scientific and the federal regulatory definition of asbestos.

PRIOR WORK IN ASBESTOS LITIGATION

Since I received my PhD in 1972, I have been employed as a professor at the University of Maryland. During this time, I have never been an employee of a private company. I have analyzed many samples for asbestos over these past 35 years for which I received compensation. The vast majority of these samples came to me from the State of Maryland as part of their asbestos in the schools program. I have also analyzed samples from mining companies and from private individuals and from the US Navy while I served as their reference analyst.

In my career, I have given a total of five depositions. In July of 2007 I gave a deposition on the source of talc samples used by Merle Stanton and co-workers in their groundbreaking 1981 work. Before that, the most recent of these depositions was 16 years ago. I have never testified in a personal injury trial. I did testify in two regulatory hearings in the late 1970's on the nature of asbestos. I also have given testimony at a number of federal reviews of regulatory policy conducted by OSHA and MSHA. The federal government has for more than 30 years used a definition of asbestos that is unnecessarily broad, and in two cases I gave depositions involving analyses I had done on materials that in my professional opinion were not asbestos containing. In another, I gave a deposition on the mineralogy of wind blown deposits in Kansas soils. In the fourth, at the request of the Attorney General of Maryland, I described my work as the analyst for the State of Maryland in the Asbestos in the Schools program.

REGULATORY HISTORY

In the early 1970's the United States lagged behind the rest of the world in the strict regulation of occupational exposure to airborne asbestos. Regulation of asbestos was one, if not the first, major initiative of both EPA and OSHA when they were formed at this time. Needless to say, these two agencies were in a hurry.

OSHA wrote a **definition of asbestos** and specified a **method for its measurement;** both were incorporated into law. Together these comprise the federal regulatory definition of asbestos.

The federal regulatory definition was written without any consultation with the mineral experts at the United States Geological Surveyor the US Bureau of Mines, and, consequently, it was not mineralogically correct.[1]

OSHA's regulatory definition identified mineral names without specifying the asbestiform character. This is the same as saying that hail and snow are the same thing. Both are ice, but everyone knows that they are not the same and that they have different potentials for harm.

The measurement method, called the membrane filter method,[2] compounded the definitional problem. The foundation for the membrane filter method was developed in the 1960s in British factories that utilized asbestos. The particles included in exposure estimates were specified by both a minimum length and a minimum length to width ratio. A length of >5 micrometers was chosen to reflect an acceptable level of reproducibility among analysts.[3] A length to width ratio of 3:1 was also specified, but its choice was not explained. Whatever the reason, 3:1 was arbitrary. It is not a scientific definition of a fiber, it does not reflect the length to width ratio of asbestos fibers, and it was not chosen because of any studies linking it to health effects.

Because of the membrane filter method, particles longer than 5 micrometers with a length to width ratio of 3:1 or higher meet what has become known as the Regulatory Fiber Definition (RFD). They are also referred to as "federal fibers."

The effect of these two specifications, a mineralogically incorrect definition of asbestos and the development of an arbitrary Regulatory Fiber Definition (RFD), is that sometime during the 1970's, rock fragments, sometimes called cleavage fragments, became fibers and fragments of six minerals became *de facto* asbestos.

In 1992, OSHA examined this issue in detail. They concluded that there was no scientific evidence that rock (cleavage) fragments have the same health potential as asbestos fibers.

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[1] OSHA's list of asbestos is also incomplete. One very public effect of the latter mistake is that most of the asbestos occurring at Libby, Montana, is not technically covered by asbestos regulations. (Verkouteren and Wylie, 2000)
[2] Leidel et al., 1979
[3] Addingley, C.F., 1966; Lynch et al., 1970

OSHA removed them from the asbestos standard.[4] I am not aware of any epidemiological, animal or cellular studies that have been done since the OSHA decision that would change this conclusion.

NIOSH disagreed with OSHA, and up to this time, it has been the practice of NIOSH to assume that the RFD describes the size and shape of fibers that correlate with their potential to cause human disease.[5] The RFD was also recently applied by EPA in the El Dorado Hills, CA, study. It is clear that there is disagreement within the regulatory community on the appropriateness of the RFD in the protection of health.

NIOSH has just opened this question for study.[6] This year, NIOSH issued a White Paper outlining in detail a research agenda to examine this question and held public hearings on it last month. The adverse health effects of asbestos are widely known and, with the exception of the differences in hazard between chrysotile-asbestos and amphibole-asbestos, are not in dispute. What the NIOSH White Paper addresses is the need to examine the health effects of nonasbestos particles that meet the RFD.

While the NIOSH White Paper does not provide evidence that challenges OSHA's 1992 decision, it calls for study of the issue, including, animal inhalation studies, epidemiological studies of miners, and cell culture studies. These are necessary before the health effects of nonasbestos particles that meet the RFD can be understood fully.

Why is this issue still in debate after the 1992 OSHA decision? Partly, I believe, that it comes from 1) lack of knowledge about the nature of asbestos, 2) acceptance of the hypothesis that **only** the size, shape, and durability of mineral particles affect their carcinogenic potential, and 3) a reluctance to change positions.

THE NATURE OF ASBESTOS

Asbestos is unusual.[7] It is a mineral habit, like snow and hail are habits of ice. Habit is a form of "growth" that describes morphology.

Asbestos grows as bundles of single fibers, (referred to as fibrils), that are easily separated from each other by hand pressure. The geologic environment that enables asbestos to form is limited and involves the presence of warm, water-rich conditions and open underground spaces.

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[4] OSHA, 1992
[5] NIOSH, 2007
[6] NIOSH, 2007
[7] Wylie, 1979, 1993, 1988; Verkouteren and Wylie, 2002

Fibrils have narrow widths and extraordinary tensile strength. They are difficult to break and their strength makes them flexible and almost impossible to grind. They are able to enter the body because of their narrow widths and they are retained because their lengths (as much as several hundred micrometers) thwart the body's mechanisms to remove them.

Asbestos can form from a number of different minerals. A mineral name implies **only** a particular atomic arrangement of a fixed set of elements in particular proportions. Mineral names are not synonyms for asbestos, just like ice is not a synonym for snow although snow is made of ice. To specify asbestos, the mineral name is followed by the term asbestos, e.g., tremolite-asbestos. Two types of commercially important asbestos have a specific name, e.g., crocidolite is riebeckite-asbestos, and amosite is cummingtonite-grunerite asbestos.

The dimensions of asbestos fibrils found in occupational air and in the lung of asbestos workers are published in the literature, providing the basis for a **dimensional definition of asbestos fibers**. Although an accurate dimensional definition of asbestos may have been unnecessary in monitoring asbestos factories, mills and mines where what was in the air was only asbestos, it is essential in a mixed dust environment, essential when dealing with environmental exposures, and essential if a zero tolerance for asbestos is to be enforced in the United States.

Published data on the width of asbestos fibers found in bulk samples, on air monitoring filters, and in lung tissue show that asbestos is composed of mineral fibrils that are less than 1 micrometer (10,000 A) in width.[8] Fibrils wider than 1 micrometer are brittle (lack tensile strength) and cannot be used as asbestos.[9] The widths of the smallest fibers, called fibrils, vary somewhat within and among asbestos deposits, but the range is narrow. The dimensions of the most abundant forms of asbestos are similar: crocidolite fibrils are about 500 to 2000 A in width, amosite and anthophyllite-asbestos are about 2000 to 10,000 A in width, and chrysotile-asbestos fibrils are about 200-650 A.[10]

Other types of asbestos have equally narrow widths. Actinolite-asbestos has fibril widths of 600-2000 A and tremolite-asbestos fibrils range from about 2000 to 6000 A (see attached photo). At Libby Montana, mean widths are about 5000A and the range is 2000 to about 10,000A.[11]

Studies of the lung burden of asbestos workers also report very narrow fibers. Martha Warnock measured 3723 fibers from lung tissue from 27 mesothelioma cases and identified them as crocidolite, tremolite-asbestos, anthophyllite-asbestos, actinolite-asbestos, chrysotile-asbestos, amosite, or other by TEM. More than 60% of the fibers are either amosite or chrysotile-asbestos. The mean width of the entire population was 2600 A; for amosite it was 2300 A and for

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[8] Wylie et al.,1993
[9] See Zoltai, 1981, for an excellent discussion.
[10] Polygonal serpentine fibers may have diameters up to 10,000A. Baronnet and Devouard, 2005.
[11] Wylie et al., 1993

chrysotile-asbestos, 600 A. Similar dimensions were observed by Warnock in asbestosis and lung cancer cases.[12]

The width of asbestos fibers is independent of length.[13] Width is the same no matter how long the fibers because width is an independent characteristic imparted during the "growth" of the fibers.

Berman et al.[14] extensive and careful evaluation of the 13 different rat experiments conclude that the fibers that contribute to tumor risk are <4000A in width or they are bundles and aggregates of such fibers. Stanton and others also find that fibers less than 2500A or less in width are most likely to be carcinogenic. The NIOSH White Paper states: "Fibers and particles with diameters less than 0.5um (5000 A) are more likely to cross membranes and translocate to pleural and peritoneal spaces and are more likely to enter the lymphatic and circulatory systems." Thus, not only is the width of asbestos a defining characteristic, it is key to its carcinogenicity.

Cleavage fragments are different. Cleavage fragments, formed by crushing rock, get wider as they get longer and width is therefore dependent on length.[15] They do not possess the asbestos characteristic of high tensile strength and their surfaces are different in fundamental ways. While a 40 micrometer long asbestos fiber could easily have a width of 0.2 micrometers, such dimensions could never be formed by breakage and no cleavage fragments have such dimensions.

I am attaching photographs of fibers of tremolite-asbestos and of cleavage fragments of cummingtonite-grunerite to illustrate the contrast in morphology.

SIZE AND SHAPE HYPOTHESIS

The hypothesis that only dimensions and durability (biopersistence) determine a mineral particles potential to cause mesothelioma, lung cancer, laryngeal cancer, and asbestosis is known as the Stanton Hypothesis. It was based on a large number of experiments in which Stanton and coworkers at the NCI implanted a number of different fibrous materials in rats.[16] They found that the number of long thin fibers highly correlated with the sarcomas that developed after implantation. Other researchers have found similar results.[17]

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[12] Warnock, 1989
[13] Siegrist and Wylie, 1980
[14] 1995
[15] Siegrist and Wylie, 1980
[16] Stanton et al., 1981
[17] Bertrand, and Pezerat, 1980, Davis et al., 1991, Smith et al., 1979, Pott et al., 1974

If the Stanton Hypothesis is correct, then any biopersistent particle that has the dimensions of real asbestos should have the same carcinogenic potential as asbestos. For example, long thin fibers of erionite, a mineral not regulated as asbestos, are thought to be responsible for a high incidence of mesothelioma among several small villages in Turkey.[18] Furthermore, the long, thin fibers of winchite-asbestos (not specifically regulated as asbestos by the federal government) from Libby, Montana, have been identified as the agent in a number of mesothelioma cases among those occupationally exposed.[19]

However, we also know from the experience of miners exposed to other durable long, thin fibers such as fibrous talc[20] that **all** durable long, thin fibers are **not** the same. Many studies have shown the importance of the surface in the biological activity of mineral fibers.[21] Understanding the basis of the carcinogenicity of mineral fibers requires further study.

Can the Stanton Hypothesis be used to justify concern for nonasbestos, durable, RFD particles? If the RFD corresponds to a high carcinogenic potential, then many mineral particles would be potential carcinogens. Many common durable minerals break into elongated particles that conform to the RFD even though they are not asbestiform and do not have the dimensions of asbestos fibers. These include pyroxenes, feldspars, zeolites, some sheet silicates, and many other mineral groups. In fact, the Appalachian and Rocky Mountain Chains contain abundant minerals that would form particles meeting the RFD when crushed.

What does the epidemiology tell us? The studies that have examined the epidemiology of workers exposed to dusts that contain nonasbestos amphibole particles that meet the RFD have found no asbestos-related diseases. Amphiboles make up about 5% of Earth's crust and, although a large group of minerals of variable chemical composition[22], most amphibole fragments exceed 3:1 in length to width ratio if they are longer than 5 micrometers. These studies include miners and millers from a talc mine in New York, gold miners from Lead, South Dakota (see attached photograph); vermiculite workers at Enoree, South Carolina; and iron miners from the Minnesota taconite iron district.[23]

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[18] Baris, 1987, Wagner et al., 1985
[19] Amandus et al., 1987; Sullivan, 2007.
[20] IARC, in press; Honda et al., 2002; Gamble, 1993; Stille and Tabershaw, 1982
[21] For example: Chamberlain and Brown, 1978; Feuerbacher et al., 1980; Flowers, 1980; Marchisio and Pernis, 1963; Schlipkoter et al., 1963; Brown et al., 1990; Weitzman and Graceffa, 1984; Weitzman and Weitberg, 1985; Hochella (1993) provides an excellent discussion of the variability of surface chemistry, structure and reactivity of mineral surfaces that may affect biological activity.
[22] Leake et al., 1997, 2004
[23] McDonald et al., 1988, McDonald et al., 1978, Brown et al., 1986, Higgins et al., 1983, Cooper et al., 1992, Honda et al., 2002, Gamble, 1993, Steeland and Brown, 1995, Stille and Tabershaw, 1982

Asbestos fibers **do** meet the RFD. They exceed the 3:1 length to width ratio. But because of their narrow widths, they also exceed a 5:1 and a 10:1 and most exceed a 20:1 ratio. Therein lays the problem. While asbestos fibers conform to the RFD, they are not DEFINED by it, and they cannot be separated from other mineral particles by it. While we know that it is very likely that among amphiboles it is the size and shape that affects their carcinogenicity, the question is "What size and what shape?"

I have attached a number of photographs that depict asbestos fibers and fragments of amphiboles to illustrate the problem.

RELUCTANCE TO CHANGE THE REGULATORY FIBER DEFINITION

Neither OSHA nor MSHA consider cleavage fragments to be asbestos. NIOSH has put the issue up for discussion. It is time for this issue to be resolved.

CONCLUSIONS

It is certainly appropriate to ban any product in US Commerce to which asbestos has been knowingly added or which occurs at a level of 1%, for which analytical methods have been developed and are in use. However, it is hard to understand how a ban that includes zero tolerance for trace quantities of naturally occurring asbestos can be enforced for industrial minerals and crushed stone when no scientifically validated method for distinguishing asbestos from rock fragment has been put in place by the regulatory agencies.

I conclude by asking you to support the work that NIOSH has proposed to address unanswered questions about the carcinogenicity of nonasbestos mineral particles. I also ask that the National Institute of Standards and Technology (NIST) be funded to develop new analytical methods for identifying and monitoring asbestos, and that NIEHS fund a comprehensive risk assessment. At the present time, these issues are being decided in the courts, not the appropriate venue for scientific discourse.

Sincerely,

Ann G. Wylie

Ann G. Wylie
Professor of Geology

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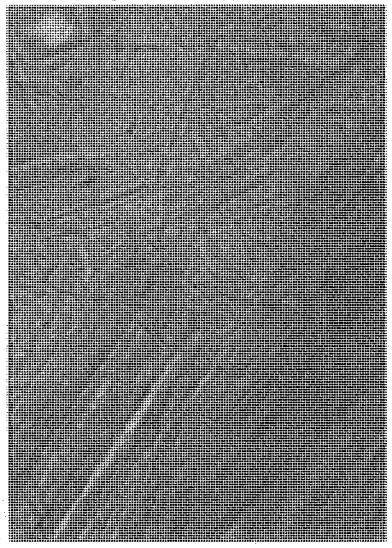
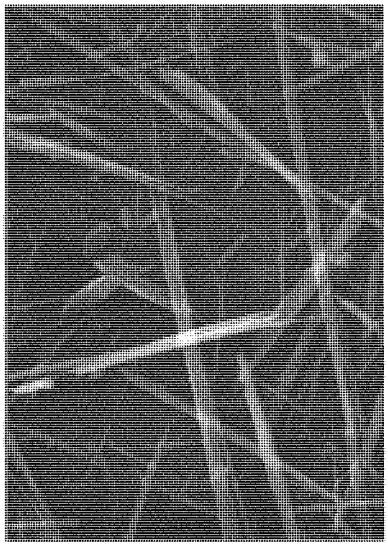
Asbestiform Tremolite — Animal Study

Light Microscopy: 320 X



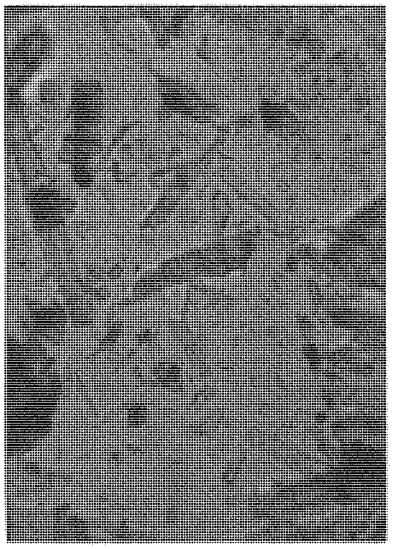
SEM: 1900 X



SAMPLE: Reported as commercial asbestos originating from S. Korea. Contains by mass approx. 95% asbestiform tremolite. It is reported this same material was used in three separate animal studies (19).

Nonasbestiform Grunerite — Human Mortality Study

Light Microscopy: 320 X



SEM: 1200 X

ORE: The ore is a cummingtonite-grunerite (CG), quartz deposit mined for its gold in Lead, S. Dakota (33).

Caroline Ahearn
Karen Torrent
Jerry Couri
U.S House of Representatives
Washington, DC 20515

February 25, 2008

Re: Legislation on Asbestos Ban

Greetings,

When banning a product such as asbestos, it is important to carefully and correctly define "asbestos." This is particularly important for complex minerals such as asbestos which has a history of being incorrectly defined and of incorrectly attributing asbestos-effect to non-asbestiform counterparts. Asbestos is a generic term for silicates that grow in an asbestiform habit such that are easily separated into long, thin, flexible fibers. These include the asbestiform amphiboles (crocidolite asbestos, anthophyllite asbestos, amosite asbestos, tremolite asbestos and actinolite asbestos) and asbestiform serpentine (chrysotile). These minerals have counterparts that are chemically similar but crystallize with non-asbestiform habits. These non-asbestiform amphibole and serpentine minerals do not form long, thin fibers; they form short, fat cleavage fragments.

Unfortunately, the past scientific literature and regulatory history has incorrectly counted these asbestiform and their non-asbestiform counterparts as equivalent. These errors become acutely detrimental when the inappropriate sampling method and incorrect interpretations of health effects are applied to cleavage fragments. It is important that the science be correct. The science shows that asbestos and non-asbestiform cleavage fragments are different minerals with respect to crystal growth and have different health effects. The scientific mistake of considering them Dear
the same should not be further perpetuated in legislation.

There are two major questions regarding the definition of asbestos (and cleavage fragments) that must be considered:
a) What is the correct mineral definition and what is the appropriate sampling analytical method for distinguishing between asbestos and non-asbestiform cleavage fragments?
b) Do asbestos and cleavage fragments have the same health effects? Do cleavage fragments cause lung cancer and mesothelioma like asbestos does?

1) Differences in Mineralogy between asbestos and cleavage fragments:
Each type of asbestos has a non-asbestiform counterpart that is chemically similar, but dissimilar in terms of morphology. When milled, asbestos forms long, thin fibrils. The non-asbestiform counterparts form short, fat cleavage fragments.

The current sampling analytical method for airborne "asbestos" does not distinguish between asbestos and cleavage fragments. The federal sampling analytical method

defines asbestos fibers as particles five microns or longer with length/width ratios (aspect ratios) greater than 3:1 under the light microscope. However, cleavage fragments of the non-asbestiform counterparts generally meet this definition (as would a toothpick). .

This counting method may be adequate for a working environment where there is asbestos exposure. But the 3:1 federal method for counting asbestos is completely inadequate and misleading when exposure is to cleavage fragments (which includes non-asbestiform counterparts of asbestos). And the counts are biased upward, often leading to incorrect interpretations that exposures to cleavage fragments are above the federal standard for asbestos, when in fact there is zero exposure to asbestos.

2) Differences in Health Effects between asbestos and cleavage fragments
a) Morphology: Animal studies have consistently shown that long, thin fibers are a major factor in producing cancer. Cleavage fragments are short and fat, readily cleared from the lung, and do not produce tumors.
b) Human epidemiology studies clearly show that asbestos consistently produces both lung and pleural cancers (mesothelioma). Exposure to non-asbestiform counterparts (cleavage fragments) does not increase the risk of lung cancer or cause mesothelioma. As exposure to asbestos increases, the risk of cancer increases. As exposure to cleavage fragments increases there is no increase in cancer risk.

The basis for these conclusions is summarized in a peer-reviewed paper accepted for publication in Toxicology and Applied Pharmacology. The paper is available on-line. The full reference is:
Gamble JF and Gibbs GW (2008) "An Evaluation of the Risks of Lung Cancer and Mesothelioma from Exposure to Amphibole Cleavage Fragments."

I will be happy to address any questions you may have and am hopeful that your policy is based on scientifically correct facts.

Sincerely,

John Gamble

566 Elizabeth Ave.
Somerset, NJ 08873
732-873-5231
johngamble@patmedia.net

HENRY A. WAXMAN, CALIFORNIA
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GREGG A. ROTHSCHILD, DEPUTY CHIEF OF STAFF
AND CHIEF COUNSEL

ONE HUNDRED TENTH CONGRESS

U.S. House of Representatives
Committee on Energy and Commerce
Washington, DC 20515–6115

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August 6, 2008

The Honorable James B. Gulliford
Assistant Administrator
Office for Prevention, Pesticides, and Toxic Substances
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Dear Mr. Gulliford:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from subcommittee Members for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 2 0 2008

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable John D. Dingell
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Dingell:

Thank you for your August 6, 2008, letters to James Gulliford, the Assistant Administrator of the U.S. Environmental Protection Agency's (EPA's) Office of Prevention, Pesticides, and Toxic Substances, and Dr. Christopher Weis, Senior Toxicologist in EPA's National Enforcement Investigations Center, transmitting questions for the record from the February 28, 2008, hearing titled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products."

I appreciate your interest in this matter. EPA is working to provide answers to the questions posed by the Committee and we expect to forward our response shortly. If you have any further questions, please contact me, or your staff may call Carolyn Levine in EPA's Office of Congressional and Intergovernmental Relations at (202) 564-1859.

Sincerely,

Christopher P. Bliley
Associate Administrator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 2 6 2008

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable John D. Dingell
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Dingell:

Please find enclosed responses to questions for the record posed by the Committee to James Gulliford, the Assistant Administrator of the U.S. Environmental Protection Agency's (EPA's) Office of Prevention, Pesticides, and Toxic Substances, and Dr. Christopher Weis, Senior Toxicologist in EPA's National Enforcement Investigations Center, from the February 28, 2008, hearing titled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products."

I appreciate your interest in this matter. If you have any further questions, please contact me, or your staff may call Carolyn Levine in EPA's Office of Congressional and Intergovernmental Relations at (202) 564-1859.

Sincerely,

Christopher P. Bliley
Associate Administrator

Enclosure

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

U.S. Environmental Protection Agency
Responses to Questions for the Record
February 28, 2008 Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products
House Committee on Energy and Commerce
Subcommittee on Environment and Hazardous Materials

Questions and Responses from the Honorable John D. Dingell to James B. Gulliford

Question 1: *In late 1999, the Environmental Protection Agency (EPA) initiated investigation and cleanup activities related to asbestos contamination in Libby, MT. The source of the asbestos, a mine and processing facility, was owned and operated by W.R. Grace Co. for the manufacture, processing, and distribution in commerce of a number of products, including Zonolite attic insulation and MonoKote spray-on building foam. At this time, the EPA continues to conduct cleanup activities. A projected date for completion of the cleanup has not been announced. On March 11, 2008, EPA Region 8 and the Department of Justice announced that W.R. Grace had agreed to pay $250 million to reimburse the federal government for cost of investigations and cleanup of asbestos contamination in Libby, MT.*

a. *Please state how much money EPA spent from December 1999 to April 1, 2008, on investigations, response, and remediation activities related to the asbestos contamination in Libby, Montana.*

Response 1a: From December 1999 to April 1, 2008, EPA had spent approximately $182 million in direct site fund expenditures (approximately $27,000 of which are special account resources used in 2004) at the Libby Asbestos Superfund site.

b. *Please state how much money EPA spent from December 1999 to April 1, 2008, on investigations, response and remediation activities related to the so-called "Libby sister sites" where ore from the W.R. Grace operations in Libby was sent for storage, processing and distribution in commerce. Please also identify the "Libby sister sites."*

Response 1b: In early 2000, EPA began compiling a list of facilities that might have received asbestos-contaminated vermiculite ore from the Libby mine. To compile the list, we used shipping records and other information obtained from W.R. Grace, as well as historical information about vermiculite processing facilities from the Bureau of Mines and the U.S. Geological Survey. After coordinating with the U.S. Geological Survey to update and revise the list of facilities and eliminate duplicate entries, we identified 271 sites that may have received the contaminated ore. These sites are thought to have received a combined total of at least 6 million tons of the contaminated ore between 1923

and the early 1990s. These sites were located in 39 states, the District of Columbia, and Puerto Rico. The most sites were in California (28) and Texas (26). The site data that we collected shows that most (95 percent) of the vermiculite ore known to have been shipped from Libby between 1964 and 1990 went to facilities that converted it into commercial vermiculite through a process called "exfoliation" (expansion). Facilities which used the vermiculite as an additive to products without going through the exfoliation process (e.g., gypsum wallboard manufacturers) are generally referred to as non-exfoliation facilities. The list of sites identified to date is included below.

Based on a search of our Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database and regional responses to our inquiries on site costs for removal actions at vermiculite ore sites, EPA estimates it has spent approximately $18 million between December 1999 to April 1, 2008 on investigations, response and remediation activities in connection with facilities that received vermiculite ore from Libby. This estimate of $18 million represents a low range of estimated costs as there are ongoing site investigations, including a new removal action initiated in the summer of 2008 (Zonolite Co., Ellwood City, PA). There also remains the potential for additional new removal actions.

List of Known Sites Receiving Libby Vermiculite Ore

1	Advance Coating Company	Non-Exfoliation	Depot Road	Westminster	MA	01473
1	California (Stucco) Products Corp	Non-Exfoliation	169 Waverly Street, Cambridge, MA (plant in Hingham)	Hingham	MA	02043
1	WRG/Zonolite	Exfoliation	62 Whittemore Ave	Cambridge	MA	02140
1	Zonolite Co/WR Grace	Exfoliation	Wemelco Way	Easthampton	MA	01027
1	Zonolite Co/WR Grace	Exfoliation	PO Box 117	Billerica	MA	01862
2	American Vermiculite Products Corp	Exfoliation	1- 41 Jacobus Avenue Tomkins Tidewater Terminal , Blg. # 35	South Kearney	NJ	07032
2	Celotex Corp.	Non-Exfoliation	1 River Rd	Edgewater	NJ	07020
2	Distillation Products Industries	Non-Exfoliation	2255 Mt. Read Blvd., Bldg. 308	Rochester	NY	14615
2	FE Schundler & Co, Inc	Exfoliation	45-15 Vernon Blvd	Long Island	NY	11101
2	FlintKote Co. (Currently Georgia Pacific Gypsum Corp,)	Non-Exfoliation	1101 South Front St.	Camden	NJ	08103
2	Garlok Sealing Technologies Inc.	Non-Exfoliation	1666 Division Street	Palmyra	NY	14522

2	Heemsoth-Kerner Corporation	Non-Exfoliation	595 River Road, c/o European Container Service	Edgewater	NJ	07020
2	Knowlton Specialty Paper Prod (also, F. Hyde & Co, and Filtration Sciences Corp.)	Non-Exfoliation	213 Factory St	Watertown	NY	13601
2	National Gypsum Company	Non-Exfoliation	325 Delaware Avenue	Buffalo	NY	14202
2	Paul Marsh Inc	Non-Exfoliation	654 Madison Ave	NY	NY	10021
2	Rapid Industrial Plastic	Non-Exfoliation	13 Linden Ave East	Jersey City	NJ	07305
2	Schundler Co	Exfoliation	150 Whitman Ave	Metuchen	NJ	08840
2	The Carborundum Co (Unifrax Corp.)	Exfoliation	1625 Buffalo Ave. (2351 Whirlpool St.)	Niagara Falls	NY	14303
2	U.S. Gypsum	Non-Exfoliation	561 Richmond Terrace	Staten Island	NY	10301
2	Venezuela Lines c/o Red Hook Marine Terminal	Non-Exfoliation	Foot of Hamilton Street	Brooklyn	NY	11231
2	Vermiculite Industrial Corp	Exfoliation	Gilligan St, Bldg 8 (Navy Area)	Port Newark	NJ	07114
2	Vermipeat, Ltd.	Non-Exfoliation	c/o Judson Sheldon Intl.,Port of Newark	Newark	NJ	
2	W. R. Grace	Non-Exfoliation	Insular Hwy 845, Km 0.5 Cupey Bajo	Rio Piedras	PR	00926
2	Wards Natural Science Establishment Inc.	Non-Exfoliation	P.O. Box 1712	Rochester	NY	14692
2	Zonolite Co/WR Grace	Exfoliation	35 Industrial Drive	Hamilton Township	NJ	08619
2	Zonolite Co/WR Grace	Exfoliation	226 Water Street	Albany	NY	12207
2	Zonolite Co/WR Grace	Exfoliation	One Clay St	Utica	NY	13501
2	Zonolite Co/WRG	Exfoliation	Dunn Road	Brutus	NY	13166
3	Allied Chemical Dye (possibly Honeywell/Allied Signal/Celotex Corp)	Non-Exfoliation	3600 Grays Ferry Ave	Philadelphia	PA	19146
3	Bestwall/LaFarge Gypsum	Non-Exfoliation	Terminal Drive	Port of Wilmington	DE	19801
3	Celotex Corporation	Non-Exfoliation	State Route #92	Harding	PA	19146
3	Certainteed Corp.	Non-	All Power Rd	Conshohocken	PA	19428

		Exfoliation				
3	Harbison-Walker Refractories Co	Exfoliation	600 Bigler Rd	Clearfield	PA	16830
3	Hyzer and Lewellen	Exfoliation	662 Belmont Ave	Southampton	PA	18966
3	J.P. Austin (A-Tops Mfg)	Exfoliation	1060 24th St	Beaver Falls	PA	15010
3	Onduline-USA (aka NuLine Industries)	Non-Exfoliation	4900 Ondura Road	Fredericksburg	VA	22407
3	Planttabbs Corp.	Non-Exfoliation	Aylesbury Road	Timonium	MD	21093
3	Therm-o-Rock/Allied Block Chemical, Inc	Exfoliation	1 Pine St	New Eagle	PA	15067
3	U.S. Steel/Duquesne Works	Non-Exfoliation	Route 837	Duquesne	PA	15110
3	U.S. Steel/Fairless Works	Non-Exfoliation	1 Fairless Works	Fairless Hills	PA	19030
3	Vermiculite Products Co	Non-Exfoliation	631 Equitable Bldg	Baltimore	MD	21202
3	Vermiculite Products Co/WR Grace	Exfoliation	1911 Kenilworth Ave NE	Washington, DC (also, Kenilworth/Beaver Heights, MD)	DC	20019
3	Virginia Vermiculite Mine	Non-Exfoliation	14093 Louisa Rd	Louisa	VA	23093
3	W. R. Grace Baltimore	Non-Exfoliation	c/o U.S. Lines-American Argasy, Shed 31, Dundalk Dock Marine Terminal 2700 Broening Highway	Baltimore	MD	21224
3	W. R. Grace Const Prod Div	Non-Exfoliation	c/o SS McLean, Sea Girt Terminal 2600 Broening Highway	Baltimore	MD	21224
3	W. R. Grace Const Prod Div	Non-Exfoliation	c/o SS Atlantic Sega, Shed 8, Dundalk Marine Terminal 2700 Broening Highway	Baltimore	MD	21224
3	Zonolite Co/WR Grace	Exfoliation	23rd & PA RR	Pittsburgh (Sharpsburg)	PA	15215
3	Zonolite Co/WR Grace	Exfoliation	12th & Factory St	Ellwood City	PA	16117
3	Zonolite Co/WR Grace	Exfoliation	12340 Conway Rd	Beltsville (Muirkirk)	MD	20705
3	Zonolite Co/WRGrace	Exfoliation	202 E Cherry St	New Castle	PA	16102
4	American Vermiculite Co.	Non-Exfoliation		Roan Mountain	TN	37687

4	American Vermiculite Minerals Incorporated	Exfoliation		Spruce Pine	NC	28777
4	Anitox Corp	Exfoliation	955 Hurricane Shoals Rd (or 1855 Anitox Rd, Buford?)	Lawrenceville	GA	30043
4	Anitox Corp	Exfoliation	1855 Anitox Rd	Buford	GA	30519
4	Bestwall Gypsum/Georgia Pacific	Non-Exfoliation	1 Union St	Brunswick	GA	31520
4	Carolina Vermiculite Div, VA Vermiculite	Non-Exfoliation	255 River Farm Road	Woodruff	SC	29388
4	Carolina Wholesale Florist	Non-Exfoliation	3015 Beechtree Dr	Sanford	NC	27330
4	Jim Walter Research Group	Non-Exfoliation	10301 Ninth St N	St Petersburg	FL	33716
4	P.B. Lassiter, Babcock& Wilcox Co. Thermal Ceramics Old Savannah Company	Non-Exfoliation	2102 Old Savannah Rd	Augusta	GA	30906
4	Palmetto Vermiculite Co/Enoree Minerals	Exfoliation	13101 Hwy 221	Woodruff	SC	29388
4	Patterson Vermiculite Co	Non-Exfoliation	1302 Patterson Rd	Enoree	SC	29335
4	Raybestos Manhattan	Non-Exfoliation	O'Hear Ave and Grace St	N. Charleston	SC	29406
4	Robert Smith Co	Non-Exfoliation		Dyer	TN	38330
4	Robert Smith Company	Non-Exfoliation	925 North 28th St	Birmingham	AL	35203
4	Southern Vermiculite	Exfoliation			NC	28734
4	Southern Zonolite Co/WR Grace	Exfoliation	1530 E Adams St	Jacksonville	FL	32202
4	Southern Zonolite Co/WR Grace	Exfoliation	2800 5th Ave S	Birmingham	AL	35233
4	Southern Zonolite/Verilite Co.	Exfoliation	6211 N 56th St.	Tampa	FL	33610
4	Temple Gypsum	Non-Exfoliation		Memphis	TN	
4	US Steel Corp	Non-Exfoliation	5700 Valley Rd	Fairfield	AL	35604
4	US Steel Corp Ensley Blast Furnace	Non-Exfoliation		Ensley	AL	
4	Verilite/Schmeizer Sales	Exfoliation	3401 E 3rd Ave	Tampa	FL	33605

4	WR Grace	Exfoliation	26383 Hwy. 221	Enoree	SC	29335
4	WR Grace	Exfoliation	1050 SE 5th St	Hialeah	FL	33010
4	WR Grace (Schmeizer Sales)	Exfoliation	Hannah Ave	Tampa	FL	33610
4	WRG	Exfoliation	Box 546	Savannah	GA	
4	Zonolite Co/WR Grace	Exfoliation	830 Hwy 25 Bypass	Traveller's Rest	SC	19690
4	Zonolite Co/WR Grace	Exfoliation	1701 Prospect St	High Point	NC	27260
4	Zonolite Co/WR Grace	Exfoliation	1167 Zonolite Pl NE	Atlanta	GA	30340
4	Zonolite Co/WR Grace	Exfoliation	1200 NW 15th Ave	Pompano Beach	FL	33069
4	Zonolite Co/WR Grace	Exfoliation	35th and 3rd Ave (3401 N. 3rd Ave)	Tampa	FL	33605
4	Zonolite Co/WR Grace	Exfoliation	2601 Commerce Blvd	Irondale	AL	35210
4	Zonolite Co/WR Grace	Exfoliation	4061 Powell Ave	Nashville	TN	37204
4	Zonolite Co/WR Grace Wilder Plant	Exfoliation	112 North St	Wilder	KY	41071
4	Zonolite Co/WRGrace/Seaboard Vermiculite	Exfoliation	1700 NW 1st Court	Boca Raton	FL	33432
5	3-M	Non-Exfoliation	1050 Hazel St, Bldg 410 Dock 91-105	St Paul	MN	55119
5	3-M, Chemolite,	Non-Exfoliation	Building 17P County Rd 19	Cottage Grove	MN	55133
5	Al-Par Peat Co	Non-Exfoliation	5900 Henderson Rd,	Elsie	MI	48831
5	American Can Co. Research Center	Non-Exfoliation	433 N. Northwest Hwy.	Barrington	IL	60010
5	Bestwall Gypsum	Non-Exfoliation	68 Baker Blvd	Akron	OH	44301
5	Bestwall Gypsum	Non-Exfoliation	619 College Ave	Grand Rapids	MI	49501
5	BF Nelson Mfg	Exfoliation	401 Main St, NE	Minneapolis	MN	55413
5	BIMAC	Non-Exfoliation	345 E. Main St	Milan	MI	48160
5	Carboline Co. Distribution Center	Non-Exfoliation	2162 Heller Road,	Alpha	OH	45301
5	Celotex Corp	Non-Exfoliation	795 S. Plasterbed Rd, PO Box 280 Old Rte 2 East	Port Clinton	OH	43452
5	Certain Teed Prod/ Diversified Insulation Twin Cities Wholesale Supply	Exfoliation	459 Harding St NE	Minneapolis	MN	55413
5	Cleveland Builders	Non-	1276 W 3rd St / 2146	Cleveland	OH	44113

	Supply Co/ Cleveland Gypsum Co. Perlite Plant	Exfoliation	West third St.			
5	Dearborn Chem	Non-Exfoliation	300 Genesee St	Lake Zurich	IL	60047
5	Dr. Tim Johnson, Minnesota Mining & Mfg., Co.	Non-Exfoliation	Building 53-3 367 Grove Street	St Paul	MN	55101
5	Dynamic Air Inc.	Non-Exfoliation	(c/o Vern Huballa) 1125 Willow Lake Blvd	St Paul	MN	55110
5	Eli Lilly Co.	Non-Exfoliation	K 406 Bldg 333, 1355 S White Rd.	Indianapolis	IN	46226
5	Exomet/Examet	Non-Exfoliation	Hwy 585	Smithville	OH	
5	FE Schundler & Co	Exfoliation	504 Railroad St	Joliet	IL	60436
5	FE Schundler & Co/Mica Pellets, Inc	Exfoliation	1008 Oak St	De Kalb	IL	60115
5	General Mills	Non-Exfoliation	1 General Mills Blvd	Minneapolis	MN	
5	GM Tech Center	Non-Exfoliation	E 12 Mile & Mound Rds	Warren	MI	48091
5	Gold Bond Bldg Prod/National Gypsum	Non-Exfoliation	U.S. Highway No 50	Shoals	IN	47581
5	Grand Rapids Gypsum	Non-Exfoliation	PO Box 1672 or 7440 Clyde Park Ave	Grand Rapids	MI	49501
5	H.B. Fuller Co	Non-Exfoliation	2727 Kinney Ave NW	Grand Rapids	MI	49544
5	Inland Steel Corp	Non-Exfoliation	2621 W 15th Place	Chicago	IL	60608
5	International Vermiculite Co/Thermic Refractories/Thermal Ceramics	Exfoliation	115 E Mound St	Girard	IL	62640
5	Kalo Innoculant Co	Non-Exfoliation	525 Kentucky St	Quincy	IL	62301
5	Koos, Inc	Exfoliation	4500 13th Court	Kenosha	WI	53140
5	Koos, Inc	Exfoliation	2000 DeKovan Ave	Racine	WI	53403
5	Loyd. A. Fry Roofing/Owens Corning	Non-Exfoliation	5824 Archer Road	Summit	IL	60501
5	MacArthur Co	Exfoliation	936 Raymond Ave	St Paul	MN	55114
5	Midwest Rubber	Non-Exfoliation	745 Norton Ave	Barberton	OH	44203

5	Nawrocki Insulation Inc.	Non-Exfoliation		Minneapolis	MN	
5	Net Ocean c/o Freight A-Ranger	Non-Exfoliation	5500 West 47th Street	Chicago	IL	60638
5	NForcer (Zonolite Co/WR Grace)	Exfoliation	14300 Henn St	Dearborn	MI	48120
5	O.M. Scott Assoc Co, Inc.	Exfoliation	14111 Scottslawn Rd	Marysville	OH	43040
5	P&H, Inc.	Non-Exfoliation			MN	
5	Paxam Corp.	Non-Exfoliation	1320 SW Monarch	Peoria	IL	61602
5	Perfect Seal/Bemis Corp	Non-Exfoliation		Mankato	MN	
5	PVP Industries, Inc.	Exfoliation	Box 129 9819 Penniman Rd	N Bloomfield	OH	44450
5	Steel Services	Non-Exfoliation	11426 S Perry St	Chicago	IL	60628
5	Strong-Lite Products Corp	Exfoliation	444 Shipyard Rd	Seneca	IL	61360
5	Swift & Co Agri Chem Division	Non-Exfoliation	150 Marble Street	Calumet City	IL	60409
5	Topex Co.	Non-Exfoliation	2516 W 3rd St	Cleveland	OH	44111
5	U. S. Gypsum Co	Non-Exfoliation	121 Lake St	Gypsum	OH	43433
5	U. S. Gypsum Co.	Non-Exfoliation	Willow Valley or State Road 650?	Shoals	IN	47581
5	U.S. Gypsum Co.	Non-Exfoliation	301 Riley Rd/ 3501 Canal St	East Chicago	IN	46312
5	U.S. Gypsum Company	Non-Exfoliation	2 Division St	River Rouge	MI	48218
5	U.S. Steel Corp.	Non-Exfoliation	1 N Broadway	Gary	IN	46402
5	U.S. Steel Corp. (South Works)	Non-Exfoliation	3426 E 89 St	Chicago	IL	60617
5	Van Packer/Flintkote Co (also as Voluntary Purchasing Co.)	Non-Exfoliation	1 Mill St	Buda	IL	61314
5	Vermiculite Indust Corp	Exfoliation	PO Box 11999, Pittsburgh, PA 15228 E. Taggart St. (Plant: WR Grace, E. Palestine, OH)	E Palestine	OH	44413
5	W. R. Grace	Exfoliation	12345 S Marshfield	Calumet Park	IL	60827

5	W. R. Grace/Const Products Division	Exfoliation	Grand Ave District Yard	Milwaukee	WI	53213
5	W.L. Spencer Mfg., Corp.	Non-Exfoliation	1693 N Water St	Milwaukee	WI	53202
5	Western Mineral Products (WRG)	Exfoliation	1720 Madison St NE	Minneapolis	MN	55413
5	Western Mineral Products Co (WRG)	Exfoliation	525 W Oregon St	Milwaukee	WI	53204
5	Wormald International	Non-Exfoliation	111 Muskin Drive	Walkerton	IN	46574
5	Wyodak Chem Co.	Exfoliation	4600 E 71st St	Cleveland	OH	44125
5	Zonolite Co/WR Grace	Exfoliation	603 Fenton Lane W	West Chicago	IL	60185
5	Zonolite/WR Grace	Non-Exfoliation	4725 Olson Memorial Hwy	Golden Valley	MN	55422
6	Almasol Corp.	Non-Exfoliation	1628 Rogers Road	Fort Worth	TX	76107
6	American Gypsum	Non-Exfoliation	1000 N HIll Rd	Bernalillo	NM	87004
6	American Gypsum Co/Centex	Non-Exfoliation	7715 Tiburon St	Albuquerque	NM	87103
6	American Perlite Co.	Non-Exfoliation	128 Railroad Ave	Gilliam	LA	71029
6	Bestwall Gypsum	Non-Exfoliation	7800 Almonaster Rd	New Orleans	LA	70126
6	C. Gartenmann & Co. c/o GF Tujague, Inc.(M G Maher)	Non-Exfoliation	365 Canal St	New Orleans	LA	70112
6	Celotex Corp./Three Rivers/Southwest Gypsum	Non-Exfoliation	5 miles SW of Hamlin	Hamlin	TX	79520
6	CMI Texas, Inc.	Non-Exfoliation	2600 E. San Jose St.	Laredo	TX	78043
6	Cron Chemical	Non-Exfoliation	6015 Murphy Ave	Houston	TX	77033
6	Diercks Forests Inc. (Weyerhauser)	Non-Exfoliation	794 Hwy 369 N	Nashville	AR	71852
6	European Vermiculite Corp. c/o Southern Stevedoring Company	Non-Exfoliation	7325 S Harbor Dr	Houston	TX	77011
6	Filter Media Co	Exfoliation	W. 10 St	Reserve	LA	70084
6	Flintkote Company Eskota	Non-Exfoliation	FM 1856 at 120 on Eskota	Sweetwater	TX	79556
6	Georgia Pacific Corp/Bestwall Gypsum	Non-Exfoliation	Hwy 287	Quanah	TX	79252

6	Isolatek International	Exfoliation	3340 Bingle Rd	Houston	TX	77055
6	Material Aislantes	Non-Exfoliation	SA Marcella at Corpus Christi Rd	Laredo	TX	78040
6	National Gypsum Co	Non-Exfoliation	832 County Rd 311	Rotan	TX	79546
6	Republic Gypsum Company	Non-Exfoliation	Hwy 62 Box Drive C	Duke	OK	73532
6	Republic Gypsum/Housing/ Kaiser Co.	Non-Exfoliation	Interstate-25	Rosario	NM	
6	Scott's Co/Hyponex	Exfoliation	3713 Hwy 32 N	Hope	AR	71801
6	Solico, Inc	Exfoliation	5119 Edith Blvd NE	Albuquerque	NM	87107
6	Southern Mineralite Co/WR Grace	Exfoliation	2933 Dauphine St	New Orleans	LA	70117
6	Southwest Vermiculite Co	Non-Exfoliation	1212 13 St	Lubbock	TX	79401
6	Southwest Vermiculite Co	Exfoliation	1822 N First St	Albuquerque	NM	87102
6	Strong-Lite Products	Exfoliation	4418 Emmitt Sanders Rd	Pine Bluff	AR	71601
6	Temple Gypsum Company (c/o Customer Siding)	Non-Exfoliation	1000 North 7th St	West Memphis	AR	72301
6	Texas Gypsum	Non-Exfoliation		El Paso	TX	
6	Texas Gypsum Company	Non-Exfoliation	104 County Line Rd	Irving	TX	75061
6	Texas Lightweight Products	Exfoliation	117 N Britain Rd	Irving	TX	75060
6	Texas Vermiculite Co	Exfoliation	State Hwy 29	Burnet	TX	78611
6	Texas Vermiculite Co (WRG 1975)	Exfoliation	2651 Manila Rd	Dallas	TX	75212
6	Texas Vermiculite Co (WRG)	Exfoliation	354 Blue Star St	San Antonio	TX	78204
6	The Tri-Lite Corp	Exfoliation	2624 Link Rd	Houston	TX	77009
6	U.S. Gypsum	Non-Exfoliation	225 Regal Row	Dallas	TX	75247
6	U.S. Gypsum Co	Non-Exfoliation	1 USG Rd. E. Hwy 80	Sweetwater	TX	79556
6	U.S. Gypsum Company	Non-Exfoliation	Hwy 51a	Southard	OK	73770
6	U.S. Gypsum Company	Non-Exfoliation	1201 Mayo Shell Road	Galena Park	TX	77547

6	Universal Maritime Service/Sealand Terminal	Non-Exfoliation	919 E Barbours Cut Blvd	Laporte	TX	77571
6	Vermiculite Products, Inc	Exfoliation	3025 Maxroy St	Houston	TX	77008
6	Volite Co	Exfoliation	Box 122, N Hwy 16	Llano	TX	78643
6	Voluntary Purchasing Co.	Exfoliation	Highway 82 West	Bonham	TX	75418
6	WR Grace	Non-Exfoliation	225 Elmira	San Antonio	TX	78212
6	Zonolite Co/WR Grace	Exfoliation	4729 River Rd	New Orleans	LA	70121
6	Zonolite Co/WR Grace	Exfoliation	Dixie Rd	Little Rock	AR	72115
6	Zonolite Co/WR Grace/TX, OK Vermiculite	Exfoliation	200 N Wisconsin Ave	Oklahoma City	OK	73117
7	Celotex Corp.	Non-Exfoliation	2109 Quail Ave	Fort Dodge	IA	50501
7	Diversified Insulation/Shelter Shield/WRG	Exfoliation	4814 Fiber Lane	Wellsville	KS	66092
7	Dodson Manufacturing Co	Exfoliation	1463 Barwise St	Wichita	KS	67214
7	E.M. Peat Mfg., Co.	Non-Exfoliation	33 S 25th Street	Council Bluffs	IA	51501
7	Eagle-Picher Lead Co Insulation Division	Exfoliation	1220 NW Murphy Ave	Joplin	MO	64801
7	Georgia Pacific/Best Wall Gypsum Div	Non-Exfoliation	PO Box 187	Blue Rapids	KS	66411
7	Georgia Pacific/Bestwall	Non-Exfoliation	2374 Mill Rd	Fort Dodge	IA	50501
7	J.J. Brouk	Exfoliation	1367 S Kingshighway Blvd	St Louis	MO	63110
7	M.A. Bell	Non-Exfoliation	217 Lombard St	St Louis	MO	63102
7	Mallinckrodt Chemical Co.	Non-Exfoliation	123 Destrehan St	St Louis	MO	63107
7	National Gypsum	Non-Exfoliation	2829 180th St	Fort Dodge	IA	50501
7	U.S. Gypsum Co, Sperry	Non-Exfoliation	13425 210th St	Sperry	IA	52650
7	Western Mineral Products Co/Douglas	Exfoliation	3520 South I Street	Omaha	NE	68107
7	Zonolite Co/WR Grace	Exfoliation	5100 Manchester Ave	St Louis	MO	63110
7	Zonolite Co/WR Grace	Exfoliation	515 Madison St	Kansas City	MO	64105

8	Basin Electric Corp.	Non-Exfoliation	3901 Highway 200 A	Stanton	ND	58571
8	Big Horn Gypsum Co/Celotex	Non-Exfoliation	P.O. Box 590; 88 Road 2AB	Cody	WY	82414
8	Colorado Kansas Seed Co.	Non-Exfoliation	401 E. Beech St.	Lamar	CO	81052
8	Flintkote/Fireboard Paper/Johns-Manville	Non-Exfoliation	Hwy 120 at Adobe Siding	Florence	CO	81226
8	Georgia Pacific/Bestwall	Non-Exfoliation	200 South State St	Sigurd	UT	84657
8	Georgia Pacific/Bestwall Gypsum Div	Non-Exfoliation	2120 Lane 16 1/2	Lovell/Himes	WY	82431
8	Herbert Palmer	Non-Exfoliation	Route 3	Thermopolis	WY	82443
8	Insuplast, Inc	Non-Exfoliation	1st & Water Street	Canon City	CO	81212
8	Intermountain Insulation Co	Exfoliation	733 West 800 South	Salt Lake City	UT	84101
8	International Vermiculite Co.	Non-Exfoliation	2401 East 40th Ave	Denver	CO	80205
8	Minnkota Power	Non-Exfoliation	Milton Young Power Station, 5 miles east and 3 miles south of Center, ND	Center	ND	58530
8	Moats' Residence	Non-Exfoliation	1308 Second Ave. NW	Great Falls	MT	59404
8	Robinson Insulation Co	Exfoliation	1771 19th Ave SW	Minot	ND	58701
8	Robinson Insulation Co	Exfoliation	12th St N and River Dr	Great Falls	MT	59401
8	U.S. Gypsum Co	Non-Exfoliation	81 N. State	Sigurd	UT	84657
8	U.S. Gypsum Company	Non-Exfoliation	Heath Star Route	Lewistown	MT	59457
8	Vermiculite Intermountain	Exfoliation	333 W 100 St	Salt Lake City	UT	84101
8	Western Mineral Products Co (WRG)	Exfoliation	111 S Navajo St	Denver	CO	80223
9	Adams & Co.	Non-Exfoliation	Spur 9177	Chino	CA	91710
9	Al-Lube Division of Far Best Corp.	Non-Exfoliation	928 Allen Ave	Glendale	CA	91201
9	Arabian American Oil	Exfoliation	22 Battery Street	San Francisco	CA	24111

9	Argo Seed Company	Non-Exfoliation	761 Sanburn Rd S	Salinas	CA	93905
9	Ari-Zonolite/Buster's Street Rods	Exfoliation	6960 52nd Ave	Glendale	AZ	
9	Big Horn Gypsum Co.	Non-Exfoliation		San Mateo	CA	94401
9	CA Zonolite/Divers Insul/WRG/Steeler Inc	Exfoliation	6851 Smith Ave	Newark	CA	94560
9	California Zonolite Co/WR Grace	Exfoliation	5440 San Fernando Rd	Los Angeles	CA	90039
9	California Zonolite Co/WR Grace	Exfoliation	208 Jibboom St	Sacramento	CA	95814
9	Domtar/Kaiser Gypsum America Inc.	Non-Exfoliation	1401 Water St	Long Beach	CA	90802
9	Domtar/Kaiser Gypsum Inc.	Non-Exfoliation	Willow Ave	Antioch	CA	94509
9	Flintkote Co, Gypsum Prod Div	Non-Exfoliation		Arden	NV	
9	Flintkote Co/Blue Diamond	Non-Exfoliation		Niles	CA	
9	Foseco	Non-Exfoliation	17 St & Rochester	Cucamonga	CA	91730
9	GE	Non-Exfoliation		San Bernardino	CA	
9	Germian's Seed Company	Non-Exfoliation	4820 East 50th Street	Los Angeles	CA	90058
9	H.B. Fuller Co.	Non-Exfoliation	57 S Linden Ave	San Francisco	CA	94102
9	James Hardie Gypsum	Non-Exfoliation	26300 La Alameda	Mission Viejo	CA	92691
9	La Habra Products, Inc	Exfoliation	1631 W Lincoln Ave	Anaheim	CA	92805
9	MV Inc., c/o Santa Fe	Non-Exfoliation		Richmond	CA	
9	National Gypsum/Gold Bond Bldg Prod	Non-Exfoliation	1850 W 8th St	Long Beach	CA	90813
9	National Gypsum/Gold Bond Bldg Prod	Non-Exfoliation	1040 Canal Blvd	Richmond	CA	94800
9	Pabco Gypsum/Johns-Manville/Fiberboard c/o Their Siding	Non-Exfoliation	1973 N Nellis Blvd	Las Vegas	NV	
9	Pabco/CA Gypsum Co./Fireboard Paper	Non-Exfoliation	37851 Cherry St	Newark	CA	94560
9	Pryor Giggey Co.	Non-Exfoliation	12393 Slavsen Ave	Whittier	CA	90606

9	Pryor Giggey Co.	Non-Exfoliation	10000 Santa Fe Springs Road	Santa Fe	CA	
9	Riley Ruminant Nutrient	Non-Exfoliation		Tucson	AZ	
9	Solomon's Mines/Diversified Insulation WRG	Exfoliation	4200 W Glenrosa Ave	Phoenix	AZ	85019
9	Southwest Grease Company	Non-Exfoliation	19530 South Alameda	Compton	CA	90221
9	Therm-o-Rock Ind	Exfoliation	6732 W Willis Rd	Chandler	AZ	85226
9	Three V Nursery c/o Santa Fe Railroad	Non-Exfoliation		Richmond	CA	
9	U.S. Gypsum Co	Non-Exfoliation	100 1st St	Gerlach/Empire	NV	89405
9	U.S. Gypsum Co.	Non-Exfoliation		Plaster City	CA	92269
9	U.S. Gypsum Company	Non-Exfoliation	9306 Sorensen Ave	Santa Fe Springs	CA	90670
9	Vermiculite of Hawaii Inc.	Exfoliation	842A Mapunpuna St	Honolulu	HI	96819
9	WRG/Diversified Insul.	Exfoliation	2502 S Garnsey St	Santa Ana	CA	92707
10	Domtar Gypsum Company	Non-Exfoliation	1240 Alexander Ave	Tacoma	WA	98421
10	Fibrous Glass Products, Inc.	Non-Exfoliation	3808 N Sullivan Rd	Spokane	WA	99216
10	Kaiser Gypsum	Non-Exfoliation	5931 East Margnaul Way S	Seattle	WA	98134
10	Supreme Perlite Co	Exfoliation	4600 North Suttle Rd	Portland	OR	97217
10	Uni-West	Non-Exfoliation	5 South Spokane St	Seattle	WA	98134
10	Vermiculite - NW, Inc (WR Grace)	Exfoliation	1318 Maple St	Spokane	WA	99201
10	Vermiculite NW, Inc (WR Grace)	Exfoliation	2303 N Harding Ave	Portland	OR	97227
10	Vermiculite-Norwest Inc.	Non-Exfoliation	P.O. Box A	Auburn	WA	98001
10	Western Industrial Supply	Non-Exfoliation	16300 SW 72nd Ave	Portland	OR	97223
10	WR Grace c/o Karl Schroff & Assoc	Non-Exfoliation		Seattle	WA	
10	X-Cell	Non-Exfoliation	5436 South Washington	Tacoma	WA	98409

Question 2: *Last year, a citizens' organization, the Asbestos Disease Awareness Organization (ADAO), tested a number of common household products. Asbestos was discovered in a number of the items tested, including a spackling compound and a children's toy. The children's toy was also tested by the State of Connecticut and found to contain asbestos. Connecticut took steps to remove the toy from store shelves in order to protect children from exposure. Information on ADAO's testing effort and results were sent to EPA last year. Please describe what actions, if any, EPA has taken since then to prevent children from being exposed to asbestos in the toy, as well as the other products tested by ADAO.*

Response 2: The particular children's product that ADAO highlighted was voluntarily pulled from the market after the group's report was publicized. The Consumer Product Safety Commission has the authority to recall consumer products where an unreasonable risk of injury exists. The Commission is aware of the reported findings and is reviewing the report.

Question 3: *The use of asbestos diaphragms in the manufacture of chlorine, caustic soda, and other chemicals produced by the chlor-alkali industry was developed in the late 1800's. Other manufacturing techniques that do not involve the use of asbestos have been developed since that time, but more than a dozen chlor-alkali facilities in the United States still rely on asbestos diaphragms. Please provide a list of United States facilities that still use asbestos diaphragms.*

For each of the listed facilities:

a. *Please indicate the total number of diaphragm production units at the facility, along with the number that use asbestos diaphragms vs. the number that have used an asbestos substitute or alternative type of diaphragm.*
b. *Please state the year the facility began operating.*

Response 3 a, b: At present, the only information available to EPA in connection with the questions posed here is Table 1 from the Chlorine Institute publication entitled Pamphlet 10, *North American Chlor-Alkali Plants and Production Reports – 2007* (attached separately). This Table does not provide all of the specific information requested, but it does provide information on the age of the chlorine plants in the U.S. and the type of cell technology used by the plants.

c. *Please list the number of pounds of asbestos released by each facility for each of the past three years, as reported pursuant to the Emergency Planning and Community Right To Know Act's Toxics Release Inventory.*

Response 3 c; See chart below:

Facility Name	Location	Primary NAICS Code	Asbestos Releases (Pounds)		
			2004	2005	2006
Olin Corporation	1638 Industrial Rd, McIntosh, AL, 36553	325181	N/A[1]	N/A[1]	N/A[1]
Occidental Chemicals Corp	6200 S. Ridge Rd. Wichita, KS 67215	325181	9795 lbs	12,770 lbs	12,000 lbs
Occidental Chemicals Corp	7377 Highway 3214 Convent, LA 70723	325181	14 lbs	14 lbs	11 lbs
Occidental Chemicals Corp	266 Highway 3142 Hahnville, LA	325181	200 lbs	652 lbs	531 lbs
Dow Chemical Co. Plaquemine	21255 LA Highway 1S Plaquemine, LA 70765	325199[2]	489,478 lbs	171,940 lbs	1,388,459 lbs
Georgia Gulf Chemicals & Vinyl LLC	26100 Highway 405 S, Plaquemine, LA 70764	325211	0	0	0
PPG Industries, Inc.	1300 PPG Drive, Westlake, LA 70669	325181	N/A[1]	N/A[1]	N/A[1]
Pioneer Americas LLC (known now as Olin)	8000 Lake Mead Pkwy, Henderson, NV 89015	325181	21,280 lbs	23,612 lbs	26,699 lbs
Occidental Chemicals Corp	4133 Highway 361 Gregory, TX	325199	0	0	0

[1] Filed a Form A certification in lieu of a Form R (release) report due to low amount of asbestos.
[2] Note that where primary NAICS code is not 325181, secondary NAICS code used to identify facility as chlor-alkali facility.

Occidental Chemicals Corp	4700 Buffalo Ave Niagara Falls, NY 14302	325181	N/A[1]	N/A[1]	N/A[1]
PPG Industries, Inc.	State Route 2 New Martinsville, WV 26155	325181	345 lbs	303 lbs	572 lbs
Oxy Vinyls LP La Porte VCM Plant	2400 Miller Cutoff Rd La Porte, TX 77571	325181	500 lbs	2,000 lbs	821 lbs

[1] Filed a Form A certification in lieu of a Form R (release) report due to low amount of asbestos.
[1] Note that where primary NAICS code is not 325181, secondary NAICS code used to identify facility as chlor-alkali facility

Question 4: *In 1989, EPA promulgated regulations that banned "new uses" of asbestos. In 1994, EPA issued technical amendments to these regulations clarifying that the ban on new uses of asbestos was not overturned by the 5th Circuit Court of Appeals opinion in Corrosion Proof Fittings v. EPA. Since that time, has EPA filed any administrative or judicial actions to enforce the "new uses" prohibition on asbestos? If the answer is yes, please provide a list of each action and summarize the resolution of the matter, including information on any penalties or injunctive relief obtained.*

Response 4: EPA has not filed any administrative or judicial actions concerning new uses of asbestos, as they are defined in the current EPA Asbestos Ban and Phaseout Rule.

Question 5: *CARB Method 435 - Asbestos in Serpentine Aggregate is identified as a historic conditional method by the EPA. Is it true that EPA's confidence in a method included in this category is based upon review of technical information, including but not limited to: field and laboratory validation studies, EPA understanding of the most significant quality assurance (QA) and quality control (QC) issues; and EPA confirmation that the method addresses these QA/AC issues in a manner sufficient to identify when the method may not be acquiring representative data? Is it also true that the method's QA/QC procedures are required as a condition of applicability?*

Response 5: The answer to both questions is yes.

CARB 435 is designated a historical conditional method by EPA's Air Program. EPA confidence in this category of methods is based upon review of various technical information including, but not limited to, field and laboratory validation studies; EPA understanding of the most significant quality assurance (QA) and quality control (QC) issues; and EPA confirmation that the method addresses these QA/QC issues sufficiently

to identify when the method may not be acquiring representative data. The method's QA/QC procedures are required as a condition of applicability.

Question 6: *Please identify each product or use that EPA attempted to ban or restrict under the 1989 EPA new-use regulations, and indicate whether those bans or restrictions remained in effect after the 5th Circuit Court of Appeals opinion in the Corrosion Proof case.*

Response 6: The table referenced below shows the asbestos-containing products that EPA attempted to ban by regulation in 1989 and the restrictions that remain in place after that regulation was overturned in large part. Note: The definition of "Asbestos-containing product" referenced in the Asbestos Ban and Phaseout Rule means any product to which asbestos was deliberately added in any concentration or which contains more than 1% asbestos by weight.

new uses (Note: a new use is a use that was initiated for the first time after August 25, 1989)	asbestos-cement corrugated sheet	acetylene cylinders
flooring felt	asbestos-cement flat sheet	arc chutes
commercial paper	asbestos-cement pipe	asbestos diaphragms
corrugated paper	asbestos-cement shingle	battery separators
roll board	asbestos clothing	high-grade electrical paper
specialty paper	pipeline wrap	missile liners
	roofing felt	packings
	roof coatings	reinforced plastic
	non-roof coatings	sealant tape
	vinyl/asbestos floor tile	specialty industrial gaskets
	automatic transmission components	textile products
	clutch facings	
	disc brake pads	
	drum brake linings	
	brake blocks	
	commercial and industrial asbestos friction products	
	sheet and beater-add gaskets (except specialty industrial)	
	millboard	

Questions and Responses from the Honorable Joe Barton to James P. Gulliford:

Question 1: *There has been much discussion about the EPA Superfund Office Memo. Besides the discussion of the 1 percent level, this memo states that: EPA wants its cleanups using this figure, to employ risk-based, site specific determinations of whether to remediate beyond 1 percent asbestos by weight. The memo clearly says that it is not a blanket call for all sites to engage in this practice. In addition, the memo invites interested parties to question and object to the substance of the memo and its appropriateness. Since the EPA memo is arguing that a risk-based, site specific approach is appropriate, is it advisable to make TSCA use arbitrary, statutory targets?*

Response 1: The August 10, 2004 memo from Michael Cook, then Director of the Office of Superfund Remediation and Technology Innovation, titled, "Clarifying Cleanup Goals and Identification of New Assessment Tools for Evaluating Asbestos at Superfund Cleanups," had two purposes: first, "to clarify that Regions should develop risk-based site-specific action levels to determine if response actions should be taken when materials containing less that 1 percent asbestos . . . are found on a site" and second, to outline some activities underway to assist in evaluation of risks at sites.

The chief purpose of the Asbestos Hazard Emergency Response Act (AHERA), or Title II of TSCA, which was passed by Congress in 1986, was to establish regulations to safely manage asbestos hazards in U.S. schools. In AHERA, Congress defined asbestos-containing material as "any material which contains more than 1 percent asbestos by weight

The difference in approach (between the Superfund memo and AHERA) can be attributed to the difference in purposes behind site cleanups, where substantial variation in sites and situations may exist, and regulation of asbestos-containing materials in schools, where there is a need for clear and consistent standards for purposes of hazard identification, compliance and enforcement.

Question 2: *You touched briefly, during the question period, about chlor-alkali facilities that use asbestos diaphragm technology. I have one question and one comment to which I would like to hear your reaction. First, are all chlor-alkali facilities which use asbestos diaphragms and operate in the United States using the same exact products and processes? Second, as it has been related to me, the European Union has just completed a comprehensive review of its exemption for use of asbestos diaphragms in the chlor-alkali industry and determined that the exemption should continue indefinitely. According to the European Commission, as part of that review process the EU reviewed extensive information which indicated that:*

- *In many cases substitute materials were not feasible for existing facilities and all situations;*
- *Conversion to high-voltage asbestos-free operation would not be economically viable; and*

- *There is no risk to workers from the use of asbestos diaphragms in these installations.*

What is your reaction to these facts?

Response 2: EPA has not conducted an analysis of chlor-alkali facilities in the United States (or elsewhere) using asbestos diaphragms. However, according to the Chlorine Institute:

> "The chlor-alkali facilities which use asbestos diaphragms do not use the same products and processes. Preparation of the asbestos diaphragm for these plants is more of an art than a science. While the diaphragms may look similar, they all do not have the exact same composition. The percentage of asbestos in the diaphragm may vary as can the thickness of the diaphragm. There may be other materials in the diaphragm which can vary by facility. The Chlorine Institute does not have any further information concerning any of these details.
>
> The chlor-alkali processes employing the asbestos diaphragms are all different. A review of the attached Table 1 provided by the Chlorine Institute shows a variety of diaphragm cell types (e.g., OxyTech H2A, OxyTech H4, Glanor 1144). The type of cell and the amount of current utilized at the facility affect the amount of chlorine and co-products produced. This design, as well as other factors, such as the current density has a significant effect in evaluating the feasibility of replacing the asbestos diaphragm with a non-asbestos diaphragm or with membrane cell technology. These are factors that each individual facility must evaluate."

In the past, EPA acknowledged the rationale for an exemption for these facilities and recognizes that other countries have exempted chlor-alkali facilities from asbestos regulations. In the 1989 Asbestos Ban and Phase-out rule, EPA stated that a ban would not be appropriate for this product category for a number of reasons, including lack of substitutes, and the high cost and relatively minimal benefits of banning this product.

Question and Responses from the Honorable John Shadegg to James P. Gulliford

Question 1: *Are you familiar with California ARB-435? Last year, Melanie Marty, with the California Air Resources Board testified before the Senate about the difficulties of assessing risk from exposure to naturally-occurring asbestos present in the soil. Is it not true that this protocol is currently being revisited because of widespread inconsistencies among laboratories as to how the counting protocols are to be applied? Do you think it is wise then for the Committee Print's statutory exception for aggregates to use California's legally allowable level for asbestos if the state admits on the record that it is having trouble with it?*

Response 1: In 2007, the California Air Resources Board (CARB) conducted an interlaboratory study to compare the results from different laboratories following the CARB 435 protocol. All of the labs analyzed the same samples of asbestos-containing soils, although each used somewhat different techniques based upon their own interpretation of the protocol. The interlaboratory study demonstrated significant laboratory-to-laboratory variations in reported asbestos concentrations from the same samples. Much of the variation appeared due to different sample preparation techniques (e.g., grinding, milling, sieving) employed by the laboratories, as each lab prepared the samples using a different technique. Samples from labs using more robust grinding techniques tended to have lower reported asbestos concentrations. Some of the interlaboratory variation also appeared to be due to inconsistencies between the laboratories in identifying which structures to count as asbestos. This is a well-recognized issue in asbestos analysis.

The CARB 435 is currently being revised, based on the findings of the interlaboratory study. CARB has informed EPA it plans in 2009 to "tighten" both the procedures for sample preparation and the rules for identifying which structures are to be counted as asbestos. CARB expects that the revisions will "significantly decrease the variability among the laboratories performing [Method] 435 asbestos analyses."

It is EPA's understanding that since 1990, the CARB has relied upon the current CARB 435 method to enforce its Airborne Toxics Control Measures, which regulate the asbestos content of surfacing materials to less than/equal to 0.25 percent and require dust control measures for construction, grading, quarrying and surface mining operations in areas containing greater than/equal to 0.25 percent asbestos. CARB 435 is also currently used by California's Department of Toxic Substance Control's schools program to determine the asbestos content of soils at new school construction sites.

Question 2: *One of our witnesses, Dr. Nolan, testified that chrysotile asbestos is not as lethal as amphibole. Can EPA say with certainty that its science unequivocally shows that chrysotile and amphibole are equally as toxic?*

Response 2: Given the evolving state of the science, EPA is unable to make "unequivocal" statements about the relative toxicity of chrysotile and amphibole asbestos. However, EPA currently is engaged in research intended to help reduce the uncertainties surrounding the toxicity of different types of asbestos.

Question 3: *Does the Department of Defense support the exemptions given them under S. 742? Does the Department of Defense support the language in the House Committee Print? Why or why not?*

Response 3: Yes, the Department of Defense supports the exemptions given them under S. 742.

The Department of Defense supports the process contained in S. 742 that provides an exemption for use of asbestos containing material necessary to the critical functions of the Department. The Department also supports the similar exemption process in the House proposed legislation. Both lay out a process that balances the need for the Department for use of products containing asbestos with protection of human health and the environment.

Question 4: *Can EPA say with certainty how many asbestos containing products, as fully defined under the House Committee Print, exist in the United States: Of this number, does EPA know how many of these producers will seek exemptions from the ban proposed under the Committee Print? Does EPA have enough resources (i.e. staff and funding) to process and review these exemptions and to further carry out the new, regular, and continual reviews of all these exemptions?*

Response 4: EPA cannot state with certainty the number of asbestos-containing products, as defined in the Committee Print, that may exist in the U.S. The 1989 Asbestos Ban and Phaseout Rule identified a broad range of product categories where asbestos had been found to be in use at that time. Production and importation of asbestos have declined over recent years, which suggest that use of asbestos in products may also have declined. At this time, EPA cannot speculate as to the number of exemptions that might potentially be requested under the Committee Print. Depending on the structure of the potential exemption process – primarily whether the burden for demonstrating the necessity of the exemption or lack thereof resides with the petitioner or with EPA – the Agency would likely need to redirect resources to manage these petitions in a timely manner.

Question 5: *In your hearing testimony, you indicate that language contained in the House Committee Print which states that an asbestos-containing product is one which bans products where asbestos is "otherwise present in any concentration" does not necessarily set a zero percent standard for the presence of asbestos. Please explain your belief that, under this language, EPA is permitted to set a standard other than zero percent.*

Response 5: The point that EPA was attempting to make with the statement in question is that as a result of both ambient background concentrations of asbestos and the current technological limits of detection, it may very well be difficult in practice to impose a zero percent standard. In light of this, EPA respectfully suggests that the Committee might want to consider incorporating a "de minimus" standard. into the definition of asbestos-containing product. For example, the OSHA hazard communication standard for carcinogens is 0.1 percent as a "de minimus" standard, Asbestos science and measurement capabilities have improved over time, and will likely continue to do so as more is learned from continuing research. Accordingly, the legislation could provide EPA with the authority to periodically review and, if necessary, modify any such de minimus standard.

Question 6: *Does the EPA stand behind the definition of "asbestos" relevant to the aggregate industry contained in the "Test Method for the Determination of Asbestos in Bulk Building Materials", which defines asbestiform minerals as those that are crystallized with the habit of asbestos, and, under a light microscope, have (a) mean aspect ratios ranging from 20:1 to 100:1 or higher for fibers longer than 5 μm; (b) very thin fibrils, usually less than 0.5 micrometers in width; and two or more of the following: (i) parallel fibers occurring in bundles; (ii) fiber bundles displaying splayed ends; (iii) matted masses of individual fibers: and/or (iv) fibers showing curvature.*

Response 6: In accordance with the Asbestos Hazard Emergency Response Act (AHERA), EPA developed the "Test Method for the Determination of Asbestos in Bulk Building Materials" for the types of products found in buildings where potential exposure could occur during and after asbestos abatement. While it is possible that some of the criteria in this method could be applied to aggregate industry materials, uses, and potential exposures, EPA would need to make a detailed evaluation of aggregate industry products and uses to determine how potentially exposed populations and asbestos release rates might differ from the exposures and releases arising from building abatement undertaken in accordance with AHERA.

In addressing asbestos releases from asbestos-containing material, EPA has recently been evaluating the use of activity- based sampling to simulate population exposures. EPA expects to continue to try to determine the most accurate way to protect potentially exposed populations from the hazards of asbestos.

Question 7: *Please describe how asbestos is regulated in other countries in which it has been "banned" – including exemptions.*

Response 7: Many developed countries have banned the use of asbestos in products. However, most of these countries provide for some exemptions. For example, in the European Community, Member States may exempt diaphragms for existing electrolysis installations until they reach the end of their service life, or until suitable asbestos-free substitutes become available, whichever is sooner. Australia, as another example, has an asbestos ban which makes it illegal to manufacture, supply, use, reuse, store or sell any products containing asbestos, including automotive brake pads and gaskets. The ban exempts uses for research and analysis, removal, handling, and disposal, and in cases where asbestos is found during non-asbestos mining.

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August 6, 2008

Dr. Christopher Weis
Senior Toxicologist
U.S. Environmental Protection Agency, NEIC
Denver Federal Center - Building 25-E3
P.O. Box 25227
Denver, CO 80225

Dear Dr. Weis:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from subcommittee Members for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL,
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

Questions and Responses from the Honorable John D. Dingell to Dr. Christopher Weis

Question 1: *During your testimony at the February 28, 2008, hearing, you stated that the United States government, the Canadian government, academic institutions, and industry have all conducted studies on exposures to low levels of asbestos. You stated that these studies show that low levels of asbestos can generate exposures of concern. Please provide the Subcommittee with a list of citations to such studies. Please include the name, authors(s), and date of the study. Please also summarize the finding from two or three of the leading studies.*

Response 1: There have been a number of independently conducted studies regarding exposures to asbestos generated by disturbance of materials and soils containing various amounts of asbestos. The available investigations which provide information on airborne exposures due to the disturbance of asbestos contaminated media include studies sponsored by the United States and Canadian governments, industry, and academic institutions.

a) Release of Dispersed Asbestos Fibres from Soils (1988), Addison, J., Davies, L., Rovertson, A., Willey, R., Report No. TM/88/14 UDC 553.676:614.7

In this study, artificial mixtures of soil and asbestos were prepared using three different soil types with each of three asbestos types in concentrations of 1%, 0.1%, 0.01% and 0.001%. The results showed that "airborne fibre [sic] concentrations could be very high (>20 fibers/milliliter (f/mL)) and even at 0.001% of asbestos in a dry loose mixture was capable of producing airborne respirable asbestos concentration in excess of the clearance limit." The authors conclude that "[e]ven small proportions of asbestos in loose, dry soil can give rise to high airborne asbestos concentrations when these materials are worked."

b) Analysis of Fiber Release From Certain Asbestos Products (1982). GCA Corporation Technology Division. Prepared for U.S. Environmental Protection Agency Office of Pesticides and Toxic Substances Chemical Control Division. Parts 1 and 2. Contract No. 68-01-5960 December 1982.

> *20 different asbestos-containing products representing 6 different product categories were tested by contract resources funded by the U.S. Environmental Protection Agency. While most of the products tested in this study contained asbestos at concentrations higher than 1%, the authors concluded that "fiber release into the ambient air is governed by the presence or absence of control equipment or recommended work practices and their effectiveness in minimizing fiber release at the point of contact during mechanical disruption" (page 121)*

c) Site Assessment Vermiculite Removal Building E-12 C.F.B. Shilo, Shilo Manitoba (1997). Prepared for: Department of National Defense Base Construction Engineering

Canadian Forces Base Shilo, Shilo, Manitoba R0K-2A0. Pinchon Project No. W7500. April 3, 1997.

> *Polarized Light Microscopy analysis of this material in the bulk phase consistently indicated a trace of actinolite/tremolite asbestos, generally less than 0.1%. Airborne asbestos concentrations were measured and confirmed by Transmission Electron Microscope analysis which showed asbestos concentrations to be as high as 174 f/mL.*

d) Evaluation of Risks Posed to Residents and Visitors of Diamond XX Who are Exposed to Airborne Asbestos Derived from Serpentine Covered Roadways. Final Prepared by ICF Technology, Inc. for The U.S. Environmental Protection Agency Region 9. May 24, 1994

> *This investigation, contracted by EPA in 1994 indicated the likelihood of elevated airborne asbestos concentrations as a result of vehicular traffic along roadways constructed of crushed serpentine rock. The results of the EPA investigation presents risks associated with traffic along roadways containing 0.006 weight percent asbestos.*

Question 2: *During your testimony at the February 28, 2008, hearing, you stated that you agreed with Dr. Aubrey Miller's testimony that studies have been done on chrysotile asbestos and diseases caused by exposure to chrysotile asbestos. Please provide the Subcommittee with a list of such studies. Please include the title, author(s) and date of each study.*

Response 2: The requested information is attached in appendix 1. References supporting EPA's assessment of chrysotile toxicity are also available in the EPA's Integrated Risk Information System database at http://www.epa.gov/ncea/iris/subst/0371.htm#evid.

Question 3: *During your testimony at the February 28, 2008, hearing, you stated that the United States Environmental Protection Agency (EPA) is currently working on a new testing method for measuring asbestos releases from contaminated soils or solids. Could you please describe that test method? How is it different from other methods of testing for asbestos? What is the current status of EPA's work on this test method?*

Response 3: In collaboration with the U.S. Department of Energy, Idaho National Laboratory (INL), EPA has been developing a more sensitive test method for asbestos in bulk media using fluidized bed technology. While EPA believes that the technique requires additional validation and peer review, results reported to EPA by the INL indicate that the fluidized bed was able to segregate [asbestos] structures in samples containing asbestos at levels well below 0.5%.[3] This methodology has been piloted at the

[3] Fluidized Bed Asbestos Sampler Design and Testing. Karen Wright and Barry O'brien, (December 2007), Idaho National Laboratory, Idaho Falls, Idaho 83415. Prepared for Office of Research and Development -National Exposure

Atlas Coalinga Superfund site, will soon be piloted by EPA at the Superfund site in Libby, MT and represents a promising approach to advancing asbestos analysis of bulk materials.

Question 4: *Would you agree that the one-percent threshold for regulation that was used by the Senate as the standard for the asbestos prohibition in S. 742 was established on the basis of analytical ability in 1973 and does not reflect current science?*

Response 4: At the time the original asbestos NESHAP was promulgated (April 6, 1973), a standardized reference method had not been developed to determine quantitatively the content of asbestos in a material. The November 20, 1990 revision of the asbestos NESHAP finally specified that Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM method) be used to determine whether or not a material contains greater that one percent asbestos.[4]

The one percent threshold is used to define thermal system insulation as indicated in the Federal Register at 29CFR 1910.1001(b). The applicability for bulk asbestos method 9002 developed by the National Institutes of Occupational Safety and Health (NIOSH) indicates that the method ***"is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content of bulk samples. The method measures percent asbestos as perceived by the analyst in comparison to standard area projections, photos, and drawings, or trained experience. The method is not applicable to samples containing large amounts of fine fibers below the resolution of the light microscope"***

It is important (as stated in the NIOSH Method 9002[5]) that the PLM method was not applicable to samples containing fibers below the resolution of the light microscope. In these situations, bulk materials can generate airborne asbestos concentrations far exceeding regulatory limits and posing considerable health risks for both occupational and environmental exposures. For such situations, both OSHA and EPA have employed personal monitoring to estimate actual airborne breathing concentrations relevant and useful for risk estimation. In their response to comments on the final rule[6] in 1987, EPA indicated that new developments in technology may lead EPA to reconsider the analytical techniques employed for bulk asbestos analysis. In the spirit of moving forward on improving characterization of asbestos exposure, EPA has recently finalized a framework for investigating asbestos-contaminated sites.[7] The EPA Asbestos Framework establishes methodologies for assessment of contaminated sites.

Research Laboratory-Environmental Sciences Division, U.S. Environmental Protection Agency, Las Vegas, NV and the U.S. Department of Energy under DOE Idaho Operations Office Contract DE-AC07-05ID14517.

[4] http://www.epa.gov/EPA-AIR/1995/December/Day-19/pr-312.html

[5] This method is similar to the EPA method: Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116).

[6] Federal Register Vol 52. No. 210. Friday October 30, 1987 pp 41837.

[7] Framework for Investigating Asbestos-Contaminated Superfund Sites OSWER Directive #9200.0-68 September 2008.

Question 5: *Is the one-percent threshold or cut-off level that was used by the Senate as the standard for the prohibition in S. 742 protective of public health? If not, please explain why not.*

Response 5: As indicated in the response to Question 1, studies have shown that, certain soils, bulk materials, or rocks contaminated with low levels (far less than 1%) of asbestos can release high (greater than occupational exposure limits) concentrations of fibers into the air when disturbed. Whether or not such conditions exist may be difficult or impossible to determine using PLM analytical techniques. High airborne fiber concentrations pose a human health hazard and my exceed public health risk thresholds under certain exposure conditions. These conditions depend upon, 1) the concentration of asbestos in air and, 2) the duration of the human exposure.

As indicated in the response to question 3, EPA is involved with the development of analytical techniques that are designed to determine concentrations of asbestos in bulk material at levels well below 1%. These analytical techniques, when finalized will have the added advantage of determining whether asbestos fibers in the bulk material of interest are releasable to air.

Question 6: *Would you agree that to improve the Senate legislation and thereby better protect the public health and the environment from hazards associated with asbestos, the asbestos ban should target any products in which asbestos is intentionally added or present as a contaminant?*

Response 6: Addition of friable asbestos to products that may release fibers to the air should be avoided if possible.

Questions and Responses from the Honorable John Shadegg to Dr. Christopher Weis

Question 1: *In your comments, you discuss a sampling methodology EPA is developing related to aggregate materials. Please provide a time frame in which EPA's "rapid technique for disturbing materials, sending them into the air, and measuring them" for asbestos will be available, and support for the notion that any such testing can be performed in a quarry or similar environment, as would be required to implement the testing in the aggregate industry.*

Response 1: In collaboration with the U.S. Department of Energy, Idaho National Laboratory (INL), EPA has been developing a more sensitive test method for asbestos in bulk media using fluidized bed technology. While EPA believes that the technique requires additional validation and peer review, results reported to EPA by the INL indicate that "the fluidized bed was able to segregate [asbestos] structures in samples containing asbestos at levels well below 0.5%."[8] This methodology has been piloted at

[8] Fluidized Bed Asbestos Sampler Design and Testing. Karen Wright and Barry O'brien, (December 2007), Idaho National Laboratory, Idaho Falls, Idaho 83415. Prepared for Office of Research and Development -National Exposure

the Atlas Coalinga Superfund Site, and will soon be piloted at the Superfund Site in Libby, MT and represents a promising approach to advancing asbestos analysis of bulk materials.

While possible, it is not necessary to perform the analysis in a quarry environment. Like most environmental monitoring (including present asbestos monitoring), samples are collected at the location of interest and shipped to a laboratory for preparation and analysis.

Question 2: *I thought I understood your comments to indicate that measurements of asbestos fibers are "subjective". Please explain.*

Response 2: As indicated by NIOSH concerning the standard PLM procedure (NIOSH 9002) for measuring asbestos in bulk materials the "***method is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content of bulk samples. The method measures percent asbestos as perceived by the analyst in comparison to standard area projections, photos, and drawings, or trained experience. The method is not applicable to samples containing large amounts of fine fibers below the resolution of the light microscope.***"

Research Laboratory-Environmental Sciences Division, U.S. Environmental Protection Agency, Las Vegas, NV and the U.S. Department of Energy under DOE Idaho Operations Office Contract DE-AC07-05ID14517.

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August 6, 2008

Dr. James R. Millette
Executive Director
MVA Scientific Consultants
3300 Breckinridge Boulevard, Suite 400
Duluth, GA 30096

Dear Dr. Millette:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from subcommittee Members for inclusion in the record. In preparing your answers to these questions, please include the text of each Member's question along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

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August 19, 2008

Linda Good
U.S. House of Representatives
Committee on Energy and Commerce
2322-B Rayburn House Office Building
Washington, DC 20515-6115

Dear Ms. Good,

Enclosed are Dr. Millette's responses to questions from subcommittee Members regarding the February 28, 2008 hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products."

Sincerely,

Kathy Holley

Kathy Holley
Administrative Assistant

Enclosure

Focused on the Science of Small Things

Responses by James R. Millette to Questions raised by the Members of the Subcommittee on Environmental and Hazardous Materials following the February 28, 2008 hearing on "S.742 and Draft Legislation to Ban Asbestos in Products".

From The Honorable John D. Dingell

Q1. Is it true that EPA often specifies test methods to be used by Government and private parties for compliance purposes?
A. Yes, EPA often specifies test methods to be used by Government and private parties for compliance purposes. Over 8 Laboratory Analytical Chemistry Methods Manuals have been published by the EPA since 1988 for use in complying with various regulatory situations. Specifically for asbestos concerns, EPA specifies that laboratories use particular methods for the analysis of drinking water[1,2], bulk building materials[3], and for the clearance of school buildings[4] after abatement. They also provide guidance and recommendations for the use of particular methods[5-7]. The USEPA also specifies asbestos test methods that laboratories must use for some local situations such as those in Libby, MT concerning contaminated vermiculite and in New York City concerning the World Trade Center disaster dust.

Q2. In your experience, is existing lab capacity sufficient to provide for school testing under Title II?
Has the testing and lab industry responded to the need for increased capacity under environmental laws in the past?
Do you believe that the testing and laboratory industry will be able to provide the necessary services to the aggregate industry?

A2. Yes, there is sufficient existing laboratory capacity for school testing. The testing and laboratory industry has responded to needs for increased capacity in the past and I have every reason to believe that the industry will be able to handle the necessary services to the aggregate industry should there be an increased need.

From The Honorable Joe Barton

Q1. Can you assure me that all of those analytical forms of testing for asbestos that are in draft or interim forms are reliable and will not change before becoming approved?

A1. No, I cannot assure you that all the analytical methods for the analysis of asbestos that are in draft or interim forms will not change before becoming finally approved. I anticipate that even after approval the methods will be subject to periodic review and updates. I do believe that, in general, the existing methods are reliable. The technical assessment of the extent of reliability of all methods is

difficult because the levels of precision and accuracy differ among methods. The current methods in use for drinking water[1,2], bulk building materials[3], and for the clearance of school buildings[4] provide reliable data for the purposes for which they are intended.

For many of the methods the ultimate test of reliability is whether its use contributes to the desired effect of the overall regulation. For instance, before the use of the AHERA (Asbestos Hazard Emergency Response Act) clearance method was required for school abatements, many facilities were using light microscope methods to test the air after the work was done. At first many of the abatement sites that were cleared by light microscope testing did not meet the new AHERA testing levels that used an electron microscope. In response, the abatement contractors dramatically improved their cleaning procedures and the outcome was significantly cleaner school rooms after abatements.

Q2. Could you please explain the practical impact of this lack of clarity from a regulatory perspective? [the PLM methods in the House Committee Print make no mention of whether asbestos is measured by weight, volume or area]

A2. From a practical point of view a sample that contains less than 0.25% asbestos by either weight, volume or area is a sample with a low amount of asbestos. As an index measurement we know that such a sample has much less chance of causing a significant exposure to asbestos fibers than a sample of, for example, 25% by weight, volume or area.
From a regulatory perspective, the question is very important because a quantity of product either passes or fails based on whether it is numerically higher or lower than the regulatory level. A measure of a percent by weight is generally considered to be preferable in the field of analytical chemistry. But in asbestos analysis it is more difficult and costs more than determinations of percent by volume or area. When a sample contains a significant concentration of asbestos as determined by volume or area percent measurement, there is no reason to believe that it does not contain over 0.25% by weight. Therefore it might be most efficient when the cheaper and easier volume and area percent determinations can be used for many samples that are not near the regulatory value. It will be an important part of the test method to be specified by the EPA to clarify the mechanism by which a sample that is close to the regulatory level is determined to 'pass or fail'.

<u>From The Honorable John Shadegg</u>

Q1. In your estimation, does the country currently have enough qualified analysts to perform polarized light microscopy to implement nationwide testing for asbestos in aggregate?

A1. I believe that the US currently has enough qualified analysts to perform the testing on a nationwide basis. Depending on the final version of the test method

specified by the Environmental Protection Agency some additional training may be necessary for some of those analysts.

Q2. In your estimation, is there a currently available test which could be used to efficiently test every truckload of aggregate material leaving a quarry?

A2. There is no currently available test that can be used to efficiently test every truckload. The situation is the same for testing hotdogs for nitrosamines, milk for PCBs or water for asbestos. It is not possible to efficiently check every hotdog coming off the line, every gallon of milk arriving at the store or every gallon of water flowing into your home. A surveying and monitoring program must be established. When EPA was mandated to set a standard for asbestos in drinking water and needed to monitor every water system in the US for asbestos, they established a workable program that involved initial testing by transmission electron microscopy followed by a monitoring schedule. Even though there are a smaller number of laboratories with TEM capability than there are polarized light microscope laboratories, the initial testing was performed within a reasonable period of time. In the development of the program a number of items were considered including the size of the systems, geology of the watershed, filtration systems in use and the presence of asbestos-cement pipe in the distribution system. A similar type of program would probably be the most efficient approach for the aggregate situation.

Q3. Is it not true that California ARB-435 is currently being revisited because of widespread inconsistencies among laboratories as to how the counting protocols are applied?

A3. Yes, CARB 435 is currently being revisited. Originally designated primarily for chrysotile asbestos in aggregate [the title of CARB435 is "Asbestos in Serpentine Aggregate"], the counting rules for amphiboles need clarification. If this method is to be the basis for the method specified by the USEPA for testing aggregate nationwide, the grinding procedures used in sample preparation need to be standardized and validated.

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3. U.S. Environmental Protection Agency, *Method for the Determination of Asbestos in Bulk Building Materials*, EPA-600/R-93/116, July 1993.

4. "AHERA" - Appendix A to Subpart E - Interim Transmission Electron Microscopy Analytical Methods, U.S. EPA, 40 CFR Part 763. Asbestos-Containing Materials in Schools, Final Rule and Notice. *Fed. Reg.* 52(210), 41857-41894, 1987.

5. Feige, M.A., Clark, P.J. and Brackett, K.A.; "Guidance and Clarification for the Current U.S. EPA Test Method for Asbestos in Drinking Water." *Environmental Choices Technical Supplement*, Fall, 13, 1993.

6. NESHAP, National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision, Final Rule, *Fed. Reg.* 55(224), 48405 Nov. 20, 1990.

7. U.S. Environmental Protection Agency, *Test Method: Interim Method for the Determination of Asbestos in Bulk Insulation Samples*, EPA-600/M4-82-020, December 1982.

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Washington, DC 20515–6115

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August 6, 2008

Mr. Gregory P. Meeker
Geologist
U.S. Geological Survey
Denver Microbeam Laboratory, MS-973
P.O. Box 25046
Denver, CO 80225

Dear Mr. Meeker:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from subcommittee Members for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

NOV 12 2008

The Honorable John D. Dingell
Chairman
Committee on House Energy and Commerce
United States House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed are responses prepared by the United States Geological Survey to questions submitted following the Thursday, February 28, 2008, oversight hearing before the House Committee on Energy and Commerce on the Mineralogy and Geology of Asbestos.

Thank you for the opportunity to provide this material to the Committee.

Sincerely,

Christopher P. Salotti
Acting Legislative Counsel
Office of Congressional and Legislative Affairs

Enclosure

cc: The Honorable Joe Barton
Ranking Member
House Committee on Energy and Commerce

Majority Questions

Question 1. With respect to the five industrial minerals, vermiculite, wollastonite, talc, olivine, and calcium carbonate, how many mines and/or quarries exist in the United States at which these minerals are extracted? Please identify the locations of these mines and/or quarries.

Answer: In 2006, the two U.S. producers of vermiculite concentrate were Virginia Vermiculite Ltd. with two operations (near Woodruff, SC, and in Louisa County, VA) and W.R. Grace & Co. from its operation at Enoree, SC (Potter, 2008).

Two companies mined wollastonite in 2007: NYCO Minerals, Inc. (a subsidiary of Resource Capital Fund IV L.P., Denver, CO), which operated a mine in Essex County, NY and R.T. Vanderbilt Co., Inc., which operated a mine in Lewis County, NY (Virta, 2008b).

In 2007, talc was produced by five companies operating nine mines in six States. All were open pit mining operations. The producers were, in decreasing order of production, Luzenac America Inc. (mining in Montana and Vermont), American Talc Co (mining in Texas), Barretts Minerals Inc. (mining in Montana), Gouverneur Talc Co. (mining in New York), and two Protech Minerals Inc. operations: CalTalc Co. (in California) and New World Stone Co (in Virginia) (Virta, 2008a).

In 2007, two companies in the United States mined olivine: Olivine Corp. (mining in Washington) and Unimin Corp. (mining in North Carolina) (Kramer, 2008).

Identifying all sites that produce calcium carbonate is more difficult, because of the large number of operations and the geologic and mineralogical diversity of the commodities at these operations. Calcium carbonate is a general term covering a large group of mineral commodities that occur in a variety of geologic environments. USGS records show that crushed stone, dimension stone, and the raw materials for lime and cement are produced from 1,732 mines and quarries in rocks largely or entirely made of calcium carbonate. We have attached four tables, one each for crushed stone, calcium carbonate for dimension stone, lime, and calcium carbonate for cement, listing all such producers known to us.

Question 2. I understand that the five industrial minerals listed in question one, because of their chemical makeup and geologic forces that shaped their formation, may be located adjacent to or co-located with asbestos deposits. Are any of the mines and/or quarries identified in response to question one located adjacent to or co-located with asbestos deposits? If so, please identify and provide the locations of these mines and/or quarries.

Answer: Asbestos is reported in published literature describing two active talc mines (in New York and California) and one active olivine mine (in North Carolina). Because of the large number of calcium carbonate operations in the United States, additional study would be required to provide the information requested.

Question 3. Please identify any mines and/or quarries provided in response to question that are known to have asbestos in their products.

Answer: The U.S. Geological Survey (USGS) does not test the composition of products offered by the producers of mineral commodities. This information can generally be obtained directly from the producer in the form of Material Safety Data Sheets.

Question 4. I understand that vermiculite, wollastonite, talc, olivine and calcium carbonate deposits and products are tested for asbestos contamination. Please identify the methods available for testing and specify which methods can detect the presence of asbestos in these mineral products at the 0.001% content level or less.

Answer: The two most common testing instruments used for asbestos testing are polarized light microscopy (PLM) and transmission electron microscopy (TEM). TEM, and in some cases scanning electron microscopy (SEM), have the potential to accurately detect or measure asbestos at the level of 0.001 weight percent or below. Identifying asbestos at these very low levels in large quantities of material would require extensive development and testing of sample homogenization procedures.

Minority Questions

Question 1. As it relates to the term "asbestos containing product" in the House Committee Print, are there concentration thresholds that should be considered in looking at the definition?

Answer: This question is best answered by health experts.

Question 2. How widespread is the distribution of naturally occurring asbestos in the United States? Is naturally occurring asbestos found in every state in the U.S.?

Answer: Asbestos is known to occur in 39 states. Recently published U.S. Geological Survey maps based on asbestos occurrences ranging in size from small veins to large ore bodies once mined for commercial and industrial uses (Van Gosen, 2005, 2006, 2007, 2008) cover all asbestos-containing deposits known in all states except Alaska, California, Oregon, and Washington. http://pubs.usgs.gov/of/2005/1189/ http://pubs.usgs.gov/of/2006/1211/ http://pubs.usgs.gov/of/2007/1182/ http://pubs.usgs.gov/of/2008/1095/

Question 3. What are the existing background levels in the ambient environment of: (1) naturally occurring asbestos; and (2) commercial asbestos? What is the environmental persistence of: (1) naturally occurring asbestos; and (2) commercial asbestos?

The USGS has not performed general background studies for natural or commercial asbestos. Such studies have been done in urban and some rural environments by various governmental and non-governmental organizations in the U.S. and abroad. Most studies are for ambient levels in air expressed as fibers per milliliter (f/mL) of air. Fewer studies have been done for background levels of asbestos in water and soil. A recent summary with references of ambient levels for

asbestos can be found in Appendix E of a University of Illinois report on asbestos contamination at Illinois Beach State Park (http://www.uic.edu/sph/glakes/coe/IBSP_Appendix_E.pdf).

The environmental persistence of natural or commercial asbestos will depend on many factors such as: the type of asbestos minerals present, extent and nature of encapsulation of the asbestos, type of soil, soil pH, humidity, average rainfall, and particle size. Generally, asbestos is relatively persistent in the environment but will eventually degrade and alter to other minerals over many years' time. A more specific answer would require characterization and dissolution studies geared to specific geologic and climatic environments.

Question 4. You mentioned in your testimony that testing results can vary depending on the lab. Notwithstanding that concern, in your estimation, does the country currently have enough qualified analysts to perform polarized light microscopy to implement nationwide testing for asbestos in aggregate?

USGS scientists are not familiar enough with the industry to provide an answer to this question. Industry groups such as the Environmental Information Association or Government accreditation bodies such as National Institute for Standards and Technology NVLAP program or the Environmental Laboratory Approval Program of the New York State Department of Health may be able to accurately answer this question.

Question 5. In your estimation, is current testing methodology certain enough to discern whether something contains zero percent asbestos? In your estimation, is it fair to impose criminal penalties on persons who sell products containing a single asbestos fiber?

Determining with certainty that something contains zero percent asbestos would require examining every bit of the material, rather than the representative samples usually used for testing. If it were deemed desirable, widely accepted, currently available sampling practices could be used to establish whether asbestos fibers are present above a threshold

Question 6. Are you familiar with California ARB-435? Is it not true that this protocol is currently being revisited because of widespread inconsistencies among laboratories as to how the counting protocols are to be applied?

We are aware that the California Air Resources Board is considering revisions to the CARB-435 method. A recent round robin study of the existing method has shown significant inconsistencies with application of the method (http://www.arb.ca.gov/toxics/asbestos/tm435/workshops/presentations/present1.pdf). These inconsistencies occurred both in the sample preparation and analysis portions of the method. The California Air Resources Board is proposing to have draft language for potential revisions to the method ready for comment by fall 2008.

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U.S. Producers of Calcium Carbonate for Cement in 2007 by State

State and Company[1]	Active Quarries	Counties
Alabama		
Cemex S.A.B. de C.V.	1	Marengo
Holcim (US) Inc.	1	Mobile
Lafarge North America, Inc.	1	Shelby
Lehigh Cement Co	1	Jefferson
National Cement Co. of Alabama, Inc.	1	St Clair
Arizona		
California Portland Cement Co.	1	Pima
Salt River Materials Group	1	Yavapai
Arkansas		
Ash Grove Cement Co.	1	Little River
California		
California Portland Cement Co.	2	Kern, San Bernardino
Cemex S.A.B. de C.V.	2	San Bernardino, Santa Cruz
Lehigh Cement Co	3	Kern, Santa Clara, Shasta
Mitsubishi Cement Corp.	1	San Bernardino
National Cement Co. of California, Inc.	1	Kern
TXI Riverside Cement Co.	2	Riverside, San Bernardino
Colorado		
Cemex S.A.B. de C.V.	1	Boulder
GCC Rio Grande Pueblo Div. (Groupo Cementos de Chihuahua)	1	Pueblo
Holcim (US) Inc.	1	Fremont
Florida		
Cemex S.A.B. de C.V.	1	Hernando
Florida Rock Industries, Inc. (Vulcan Materials Co.)	1	Alachua
Rinker Materials Corp. (Cemex S.A.B. de C.V.)	2	Dade, Hernanado
Suwannee American Cement LLC	1	Suwannee
Tarmac America, LLC (Titan America LLC)	1	Dade
Georgia		
Cemex S.A.B. de C.V.	1	Houston
Idaho		
Ash Grove Cement Co.	1	Bannock
Illinois		
Buzzi-Unicem USA Inc.	1	La Salle
Eagle Materials Inc.	1	La Salle
Lafarge North America, Inc.	1	Massac
St. Marys (Votorantim Cimentos)	1	Lee
Indiana		
Buzzi-Unicem USA Inc.	1	Putnam
Essroc Italcementi Group	2	Cass, Clark
Lehigh Cement Co	1	Lawrence

U.S. Producers of Calcium Carbonate for Cement in 2007 by State

State and Company[1]	Active Quarries	Counties
Iowa		
Holcim (US) Inc.	1	Cerro Gordo
Lafarge North America, Inc.	1	Scott
Lehigh Cement Co	1	Cerro Gordo
Kansas		
Ash Grove Cement Co.	1	Neosho
Buzzi-Unicem USA Inc.	1	Montgomery
Lafarge North America, Inc.	1	Wilson
Monarch Cement Co. (The)	1	Allen
Kentucky		
Cemex S.A.B. de C.V.	1	Jefferson
Maine		
Dragon Products Co.	1	Knox
Maryland		
Essroc Italcementi Group	1	Frederick
Holcim (US) Inc.	1	Washington
Lehigh Cement Co	1	Carroll
Michigan		
Holcim (US) Inc.	1	Monroe
Lafarge North America, Inc.	1	Alpena
St. Marys (Votorantim Cimentos)	1	Charlevoix
Mississippi		
Holcim (US) Inc.	1	Lowndes
Missouri		
Buzzi-Unicem USA Inc.	2	Cape Girardeau, Jefferson
Continental Cement Co.	1	Ralls
Holcim (US) Inc.	1	Pike
Lafarge North America, Inc.	1	Jackson
Montana		
Ash Grove Cement Co.	1	Jefferson
Holcim (US) Inc.	1	Gallatin
Nebraska		
Ash Grove Cement Co.	1	Cass
Nevada		
Eagle Materials Inc.	1	Lyon
New Mexico		
GCC Rio Grande (Grupo Cementos de Chihuahua)	1	Bernalillo

U.S. Producers of Calcium Carbonate for Cement in 2007 by State

State and Company[1]	Active Quarries	Counties
New York		
Holcim (US) Inc.	1	Greene
Lafarge North America, Inc.	1	Albany
Lehigh Cement Co	1	Warren
Ohio		
Cemex S.A.B. de C.V.	1	Greene
Lafarge North America, Inc.	1	Paulding
Oklahoma		
Buzzi-Unicem USA Inc.	1	Mayes
Holcim (US) Inc.	1	Pontotoc
Lafarge North America, Inc.	1	Rogers
Oregon		
Ash Grove Cement Co.	1	Baker
Pennsylvania		
Armstrong Cement and Supply Corp.	1	Butler
Buzzi-Unicem USA Inc.	1	Northampton
Cemex S.A.B. de C.V.	1	Lawrence
Essroc Italcementi Group	2	Lawrence, Northampton
Keystone Cement Co. (Giant Cement Holding, Inc.)	1	Northampton
Lafarge North America, Inc.	1	Lehigh
Lehigh Cement Co	2	Berks, York
Puerto Rico		
Cemex S.A.B. de C.V.	1	Ponce
Essroc Italcementi Group	1	San Juan
South Carolina		
Keystone Cement Co., Inc. (Giant Cement Holding, Inc.)	1	Dorchester
Holcim (US) Inc.	1	Orangeburg
Lafarge North America, Inc.	1	Dorchester
South Dakota		
GCC Dakotah (Grupo Cementos de Chihuahua)	1	Pennington
Tennessee		
Buzzi-Unicem USA Inc.	1	Hamilton
Cemex S.A.B. de C.V	1	Knox

U.S. Producers of Calcium Carbonate for Cement in 2007 by State

State and Company[1]	Active Quarries	Counties
Texas		
Ash Grove Cement Co.	1	Ellis
Alamo Cement Co. (Buzzi-Unicem USA Inc.)	1	Bexar
Buzzi-Unicem USA Inc.	1	Nolan
Cemex S.A.B. de C.V.	2	Comal, Ector
Holcim (US) Inc.	1	Ellis
Lehigh Cement Co.	1	McLennan
Texas Lehigh Cement Co. LP	1	Hays
Texas Industries, Inc.	2	Comal, Ellis
Zachry Construction Corp.	1	Bexar
Utah		
Ash Grove Cement Co.	1	Juab
Holcim (US) Inc.	1	Morgan
Virginia		
Titan Virginia Ready-Mix LLC (Titan America LLC)	1	Botetourt
West Virginia		
Essroc Italcementi Group	1	Berkeley
Wyoming		
Eagle Materials Inc.	1	Albany

[1]Parent company names in parentheses.

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U.S. House of Representatives
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August 6, 2008

Dr. Roger O. McClellan
Advisor: Inhalation Toxicology
Human Health Risk Analysis
13701 Quaking Aspen Place, N.E.
Albuquerque, NM 87111
On behalf of National Stone, Sand & Gravel Association

Dear Dr. McClellan:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from subcommittee Members for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

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Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

Response to Additional Questions

(August 20, 2008)

By

Dr. Roger O. McClellan
Advisor, Inhalation Toxicology and Human Health Risk Analysis
13701 Quaking Aspen Place NE
Albuquerque, NM 87111

At the request of the National Stone, Sand and Gravel Association and Coalition for Accuracy in Minerals Definition

for

Legislative Hearing on S.742, the Ban Asbestos in America Act of 2007, and the House Committee Print to Ban Asbestos in Products in the U.S.
Subcommittee on Environment and Hazardous Materials
Committee on Energy and Commerce
U.S. House of Representatives

Held on February 28, 2008

The Honorable Joe Barton

1. How do you think the Committee Print may lead to the potential impact of misclassifying ordinary rocks as being asbestos-like?

As I explained in my written statement, it is of critical importance that any legislation enacted to ban asbestos-containing products not have the unintended consequence of regulating common rock fragments that occur naturally in the environment and are routinely encountered in many essential activities within the U.S. economy. To achieve the stated goals of reducing the health risks of asbestos and avoiding unintended substantial economic impacts by regulation of common rock fragments, it is essential that any legislation to amend the Toxic Substances Control Act clearly and unambiguously distinguish between (a) ordinary rock fragments that might be inappropriately characterized as asbestos-like, and (b) true asbestos. Banning a substance that is not clearly described, so that all know what is being banned, will cause incredible harm to an effective regulatory scheme intended to focus on health effects, while causing needless loss of jobs and added costs to the consumers of common rock materials.

The Committee Print dated February 15, 2008, is seriously flawed in that it does not clearly and unambiguously distinguish between ordinary rock fragments and true asbestos. Moreover, the Committee Print on page 11 under "(5) Aggregate Products" relating to aggregate products (extracted from stone, sand, or gravel operations) proposes an approach to testing for asbestos that appear to be "borrowed" from an approach still under evaluation by the State of California. That approach, while well intended, has not been demonstrated to be reliable or reproducible and is still being evaluated and modified for use to address local issues in the State of California. Numerous difficulties have been encountered in California in attempting to validate the method (Air Resources Board Test Method 435) and transfer it from a research setting to routine practical use. In my scientific opinion, it is inappropriate for federal legislation to prescribe use of unproved methodology for routine use across the entire United States. It is especially inappropriate for federal legislation to include detailed language such as contained in the Committee Print specifying a specific asbestos content of zero (or less than 0.25 percent for specific products) if established by the EPA Administrator. Such a level might ultimately prove appropriate for true asbestos. However, the specification of any such level must be

accompanied by a clear and unambiguous definition of what is considered true asbestos. Such a definition must clearly and unambiguously define what is not classified as asbestos or asbestos-like. The quantitative risk assessment for asbestos is based on a select set of asbestos epidemiological studies that involved the handling of commercial asbestos products. The physical, chemical and crystalline structural properties inherent in those commercial asbestos products should be the foundation for how asbestos is defined since it is those fibers that have been shown to be related to disease.

The Senate-passed S.742, Ban Asbestos in America Act of 2007, passed by the Senate proposes a more scientific approach to the issue of classifying materials as containing or not containing asbestos. The Senate Bill includes a staged approach to the development and validation of methodology for classifying materials as to their asbestos content. In offering this scientific endorsement of S.742, I wish to emphasize that I am concerned with the ambitious time lines contained within S.742. Scientific uncertainty is not always resolved in a predictable manner to meet time certain goals as contrasted with goals based on scientific acceptability.

The Honorable Joe Barton

2. *How do you think the Committee Print imposes risk management procedures that will inappropriately impact the use of non-asbestiform minerals that do not pose a health hazard?*

The Committee Print, if enacted in legislation, would impose risk management procedures that will inappropriately impact the use of non-asbestiform minerals. As I have discussed in response to your first question, the Committee Print appears to mandate through federal legislation a methodology that has not been shown to be scientifically rigorous or validated. Indeed, the methodology is still under development to be used to address local issues in the State of California. As recently as June 10, 2008, the California Air Resources Board held a Workshop on ARB Test Method 435 to explore what changes might be made in the Method as a prelude to its validation and use to address specific local area issues in California. The Workshop revealed many unresolved issues including the definition of asbestos and asbestiform particles, non-asbestiform particles, detection limits, adequate Quality Assurance/Quality Control procedures, and field sampling methods.

ARB Test Method 435 might ultimately be developed and validated to be used as a basis for "Asbestos Airborne Toxic Control Measures" in California. However, it is at the limits of my imagination as to how this or a similar method could be used across the entire United States to regulate the mining, transport and use of naturally-occurring rock as an approach to minimizing the potential for exposure to asbestos or asbestiform particles under rare and highly localized circumstances. What I can envision is a complex bureaucratic scheme that will employ thousands of individuals and add extraordinary costs to a myriad of normal, essential Societal activities that touch on the lives of every American. It is not clear that such regulatory activities will have any positive public health impact. Another point here is that the inappropriate treatment of both mineral habits as being equal in toxicity when they are not will result in a circumstance where public health is at an increased risk (e.g. prioritizing sites – one contains true asbestos and another containing cleavage fragments and clean-up or exposure reduction is performed on the cleavage fragment site first).

The Honorable John Shadegg

1. Why is it critical that any legislation that is enacted recognize the unique physical characteristics of asbestiform materials that may pose a health hazard as contrasted with the physical characteristics of non-asbestiform material? Which version of legislation best keeps this distinction?

Asbestiform materials are very long, very thin flexible fibers generally appearing in bundles often with frayed ends, and when separated exist as individual fibers, as opposed to cleavage fragments from nonasbestiform rock which might break into rectangular-shaped fragments, but which are not very long, not very thin, are brittle and do not form in bundles, and when pressure is applied are broken and shattered into particles. Historically, due to the unique characteristics of asbestiform materials, they have been used for specialized applications, such as being woven into clothing, gloves and blankets with fire retardant properties.

It is well established that the unique physical characteristics (namely, size, shape, fibrillar bundles, durability and solubility) of asbestiform fibers result in their causing asbestosis leading to functional impairment and cancer when exposures are of sufficient duration and intensity. Particles that may have similar chemical composition and even

share some other physical attributes do not cause disease under similar exposure conditions. High concentrations of asbestiform fibers are found in only a few isolated areas in the United States and are no longer mined for commercial use. In contrast, non-asbestiform, common rock-forming minerals are widely distributed across the United States as common rock-forming minerals.

Amending the Toxic Substances Control Act to reduce the health risks posed by asbestos-containing materials may have intended positive impacts on the health of workers and consumers. However, the proposed legislation may have substantial unintended negative impacts on the economy and, thus, indirectly on public health, if the legislation inadvertently regulates non-asbestiform materials.

The key to effective legislation, while minimizing unintended consequences, is for the legislation to clearly and unambiguously define what will be regulated as asbestos. The Committee Print is seriously flawed and does not meet the requirements I have specified for effective legislation. Ban Asbestos in America Act of 2007 (Ordered to be printed, October 3, 2007), S.742, outlines a science-based approach that does meet my definition of effective legislation. I recognize and endorse the laudable goal of S.742 to ban asbestos. However, even with S.742, I am concerned about unintended consequences. My personal preference would be to have the legislation specifically authorize federal risk assessment studies to assure the current regulatory levels are sufficiently protective of public health under the Toxic Substances Control Act, and exclude naturally-occurring asbestos below the current regulatory levels established by the Toxic Substances Control Act, which is not intentionally added to products, from the ban. A similar but actually more liberal approach has been taken by the EU and appears to be working effectively.[(a)]

[(a)]"6.1. The placing on the market and use of these fibers and of products containing these fibers added intentionally shall be prohibited." Annex I to Directive 76/769/EEC Point 6 (August 2, 1999).

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August 6, 2008

Robert P. Nolan, Ph.D.
Environmental Studies International
P.O. Box 3622
Grand Central Station
New York, NY 10163-3622

Dear Dr. Nolan:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from Representative Shadegg for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

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Ms. Linda Good
U.S. House of Representative
Committee on Energy and Commerce
Washington, D.C. 20515-6115

August 20, 2008

Re: Response to Additional Two Questions

Dear Ms. Good:

'ease find attached my answers to the two questions from the Honorable John Shadegg requested in Congressman ingell's letter of August 6th. If you have any questions or I can be of any further assistance in this matter please feel free to contact me.

Cordially,

Response to questions from the Honorable John Shadegg from Dr. Robert. P. Nolan:

1. One key point of your testimony is that the health risks from asbestos is entirely airborne. Instead of banning "asbestos" per se, are you arguing then that we ban "airborne asbestos" and focus the regulations where it will deliver maximum benefit at least collateral cost? For example, if it turns out asbestos in aggregate is found to become airborne we could halt it. Based on what we know now, we do not need to. Isn't that correct?

   Answer: Controlling airborne asbestos would be a more effective approach for minimizing the risk of asbestos-related disease. Asbestos-related disease has historically been controlled by reducing the airborne concentration of asbestos fibers. In addition, analytical transmission electron microscopy methods for sampling low concentration of airborne asbestos have been developed while new analytical methods would need to be developed for the House Committee Print ("House bill").

   Both Senate S. 742 and House bill depart from this approach by banning asbestos-containing materials and products respectively based on the percentage of asbestos present. The House bill makes the astonishing proposal to ban products containing asbestos "in any concentration" assuming, falsely, that such analytical methodology could be developed. How do you measure zero?

   There is little (if any evidence) to suggest, and extremely pessimistic to claim, that asbestos at "any concentration" presents such an unreasonable public health risk that it needs to be banned. It is certainly an onerous and perhaps impossible burden to prove products contain no asbestos. For example, the United States used three billion tons of aggregate in 2007; if the House bill called upon the industry to certify that asbestos is not present at "any concentration" in all that tonnage, it would present it with an insurmountable analytical problem. There are provisions in the House bill to lighten this burden to less than 0.25% asbestos in aggregate products while other industries will not be so fortunate.

   The House bill goes further attaching criminal liability for failing to meet the analytical burden associated with the "any concentration" provision. These provisions seem particularly unnecessary, since there is not even limited evidence to suggest that asbestos-related disease is (or has been) a problem in the long history of the US aggregate industry.

   It would be both more protective of the public and cost effective to control airborne asbestos exposure rather than to ban products containing "any concentration" of asbestos using analytical methodology the House bill claims will be developed later.

   Our knowledge of the risks of asbestos-related disease is most highly developed for airborne asbestos. Keeping in mind there are major asbestos deposits in the United States as well as smaller isolated outcroppings of asbestos minerals in many geological sites. The asbestos ban, if passed, will cause the public to fear the mere

presence of asbestos without Congress, any regulatory agency or scientific study, ever having made a finding that the mere presence of asbestos presents an unreasonable risk.

2. You pointed out that several years ago a U.S. Court of Appeals decision discussed the void of risk analysis associated with the then proposed ban on asbestos. While nothing in that Court opinion, per se, binds Congress, it does offer some valuable and practical guidance for how we should proceed. Of the two bills, the Senate passed one and the House draft, which would likely find the less risk-based analytical support?

   Answer: I would argue that neither bill to ban asbestos is risk analysis-based in the slightest way. A better analogy would be to a religious or cultural taboo. There is nothing in either bill remotely addressing the lack of substantial evidence that asbestos presents an "unreasonable risk" that the Fifth Circuit Court of Appeals felt was missing when it remanded EPA's proposed asbestos ban in 1991 (*Corrosion Proof Fittings v. EPA*, No. 89-4596, U.S. Court of Appeals, 5th Circuit, Oct. 18, 1991.). The Fifth Circuit noted in its opinion that EPA's attempt to justify banning asbestos-containing products relied in part on risks of asbestos-related cancer that were similar to choking to death on a toothpick, at a cost of $72-106 million per statistical life saved. It strains even credulity to claim this is an "unreasonable risk".

   The Congress is not bound by the Fifth Circuit opinion but is obliged to consider if there is a basis for the Court's opinion that there is a lack of substantial evidence supporting a claim that asbestos presents an "unreasonable risk". The Senate passed a bill banning asbestos without offering substantial evidence and in fact, many of the findings in the Senate bill are false. My knowledge of the medical and scientific literature indicates the Fifth Circuit's opinion was correctly decided and the evidence that controlled use of asbestos, particularly chrysotile asbestos, causes an "unreasonable risk" simply does not exist. EPA did not appeal the Fifth Circuit's decision, which would have required them to provide the missing substantial evidence, nor did the Senate take on this challenge in its ban asbestos bill. The House should not consider banning asbestos without addressing the "substantial evidence" issue raised in the opinion of the Fifth Circuit.

   Although airborne asbestos can be dangerous, people have a tremendous fear of the asbestos minerals that is not justified by risk assessment. This is particularly true for chrysotile asbestos. Epidemiology studies have shown that among US workers manufacturing chrysotile asbestos products (in the 20th century with poorly controlled asbestos exposures) have less mesothelioma mortality than found in the general population.

   Why are we fearful of trace levels of chrysotile asbestos not even airborne but simply present in some product? Only about 1,500 metric tons of chrysotile is presently consumed annually in the United States in roofing products (excluded from OSHA regulation because no fibers are released from this product), manufacturing of chlorine gas and in the space shuttle. Asbestos minerals are highly regulated and

seldom used in the United States; the more dangerous type of asbestos (amosite and crocidolite) is no longer produced worldwide leaving no rationale for an asbestos ban. An asbestos ban would lend additional support to the many baseless claims of asbestos related disease currently in our courts (In Re: Silica Products Liability Litigation, MDL No. 1553 (S.D. Tex.).

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August 6, 2008

Ms. Margaret Seminario
Director, Safety and Health
American Federation of Labor and Congress of
Industrial Organizations
815 16th Street, N.W., 7th Floor
Washington, D.C. 20006

Dear Ms. Seminario:

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The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

Margaret M. Seminario Responses to Supplemental Questions

The Honorable John D. Dingell

1. Would you agree that the one-percent threshold for regulation that was used by the Senate as the standard for the asbestos prohibition in S. 742 was established on the basis of analytical ability in 1973 and does not reflect current science?

   Yes. The one-percent threshold that is included by reference in the Senate bill S. 742, originally was utilized in the 1973 National Emissions Standards for Hazardous Air Pollutants, and subsequently adopted in other EPA rules, was based upon the analytical ability at the time. Since then, there have been advancements in sampling and analytical techniques, both for bulk samples and air concentrations of asbestos that allow measurement of much lower concentrations.

2. Is the one-percent threshold that was used by the Senate as the standard for the asbestos prohibition in S. 742 protective of public health? If not, please explain why not.

   The threshold of one-percent asbestos by weight utilized in S. 742 is not protective of human health. As several witnesses explained at the hearing, a one-percent concentration of asbestos in a material or soil can result in significant airborne concentrations of asbestos, depending upon the conditions that the material is subject to. It is the airborne exposure to asbestos that poses the health risk. A new study published in the September 2008 Journal of Occupational and Environmental Hygiene that evaluated worker and public exposures due to naturally occurring asbestos in a construction road project found that road operations involving gravel containing less than 1% asbestos by weight generated airborne asbestos concentrations in excess of the OSHA standard of 0.1 fiber/cc.[1] (copy enclosed). In setting the 0.1 fiber/cc standard OSHA acknowledged that this level of exposure still poses a significant risk of cancer for workers exposed.

3. Would you agree that to improve the Senate legislation and thereby better protect the public health and the environment from hazards associated with asbestos, the asbestos ban should target any products in which asbestos is intentionally added or present as a contaminant?

   Yes. There is a significant body of scientific literature demonstrating that exposure to low levels of asbestos for short periods of time can result in disease. There is also significant experience demonstrating that given the long lifecycle of asbestos products and materials that it is very difficult and costly to limit asbestos

[1] Perkins, R.A., J. Hargesheimer, and L. Vaara: "Evaluation of Public and Worker Exposure Due to Naturally Occurring Asbestos in Gravel Discovered During a Road Construction Project," Journal of Occupational and Environmental Hygiene, 5:9, 609-616 (2008).

exposures over the lifecycle of the product. The best way to prevent exposures is to eliminate the introduction of asbestos into the stream of commerce through federal legislation that imposes a comprehensive asbestos ban.

4. Do you support the exemption for aggregate products in the Committee Print that is modeled after a California law? Would you agree that aggregate producers in California are able to comply with the provision in the law that specifies an asbestos content level of 0.25 percent for aggregate material? Do you believe that aggregate producers in the rest of the country would be able to comply with the terms of the aggregate products exemption under the Committee Print?

   The issue of naturally occurring asbestos is more difficult to address than asbestos that is intentionally added to products. That being said, it is also clear that exposure natural occurring asbestos can result in significant airborne asbestos exposures and present a health risk to workers and the public as graphically demonstrated by the contamination and epidemic of asbestos related disease in Libby, Montana.

   The provisions in the Committee print on aggregate products are a practical and proven approach to address the issue of naturally occurring asbestos in these products. They are modeled after provisions that have been in effect in California since November 13, 2001. I have no direct knowledge on the compliance experience with the California provisions. But if aggregate producers have been able to comply with the California provisions on asbestos in aggregate, it should be feasible for aggregate producers in other parts of the country to comply with the similar provisions contained in the Committee print.

The Honorable Joe Barton

1. You mention the August 10, 2004 EPA memo on asbestos, but do not point out that the also memo states that: (1) EPA was calling for risk-based, site specific determinations of whether to remediate beyond 1 percent asbestos by weight, not a blanket call for all sites to engage in this practice, (2) the memo invites interested parties to question and object to the substance of the memo and its appropriateness. Since EPA is arguing that a risk-based approach is more appropriate, how do you justify support for arbitrarily-set exemption targets in the House Committee Print?

   The EPA memo recommends that Regions use a risk-based approach to determine if response actions should be taken for asbestos at Superfund sites. This recommendation was made because according to the memo, some site managers were utilizing a 1 percent asbestos by weight threshold assuming that levels below this did not pose an unreasonable risk to health, when in fact that was not the case. Thus the recommendation was made that site managers evaluate the level of airborne asbestos generated by activities at the site.

   The Committee print does employ a risk-based approach. The proposal appropriately is based on the finding that any level of asbestos introduced into the stream of commerce may pose an unreasonable risk, and that the most effective way to limit or eliminate such risk is to ban asbestos. The exemption targets set in the Committee Print for aggregate products and other asbestos products are not arbitrary. They are based on the limits of detection for the levels of asbestos that can be measured. These detection limits are different for detecting asbestos in soil, bulk asbestos products and asbestos in the air, and are different for different sampling and analytical.

2. In one of its endnotes to the August 10, 2004 EPA memo, the Clinton Administration – based on some industry comments – proposed amendments to the OSHA Standards in 1994 that incorporated a definition of asbestos-containing material that included the 1 percent threshold to be consistent with EPA, and noted that NIOSH had raised questions whether even one percent may be below the accuracy level for certain microscopic methods. If microscopes are not getting us good data at 1%, how can a standard that is a fraction of this level tell us anything useful.

   As stated above, different sampling and analytical methods have different levels of detection. The method referred to by NIOSH in its comments on the 1994 OSHA asbestos standard amendment was for optical microscopic methods for bulk samples. However, there are other more sensitive methods for analyzing bulk asbestos samples with the use of electron microscopy, including EPA method EPA/600/R-93/116 that have a detection limit of 0.1% asbestos. It is also should be pointed out that the OSHA hazard communication standard requires the labeling of materials that contain more than 0.1% asbestos and that this

requirement has been in place since 1983 for many industries. In addition while the OSHA asbestos standard utilizes a cutoff of 1.0% for the threshold for asbestos containing materials, the permissible exposure limit of 0.1f/cc of asbestos in air operates independently of the asbestos material threshold. In other words, if an operation results in airborne asbestos exposure exceeding the 0.1f/cc level, the exposure must be controlled below this level regardless of the percent composition of the material. There are numerous studies showing that materials containing less than 1 percent asbestos by weight can indeed result in airborne exposures that exceed the OSHA permissible exposure limit for asbestos.

The Honorable John Shadegg

1. Your testimony states that the current asbestos standards are "constrained by feasibility considerations, available sampling and analytical methods." This leads directly to my concern about construction workers who would have to live under the 0.25 standard for aggregates. As I understand it, California, which already employs this standard, has been struggling with the practicalities of the standard. Additionally, labs are getting inconsistent results of tests as some acquire and prepare the sample material in different ways. Ultimately, why should we adopt a State standard as the statutory level if that State is having trouble and the testing meant to ensure compliance is unreliable?

   The Committee print adopts a 0.25% asbestos by weight threshold for aggregate products, but it does not adopt sampling and analytical method utilized by the State of California. The bill directs the EPA Administrator to issue guidance establishing the test method for the purposes of compliance with the aggregate provisions taking into account the most accurate and precise analytical methods for sampling and analysis of asbestos-containing aggregate products. As several witnesses, including Dr. James Millette, testified at the hearing, there are methods available capable of detecting asbestos in soil down to the 0.25% level set in the Committee Print.

2. Your testimony mentions 761 OSHA asbestos standard violations in 2007 because "employers ignore or fail to follow required asbestos control measures." Neither the House Committee Print nor the Senate bill will directly remedy your underlying concern: corrective action by people who are breaking existing law. Wouldn't better enforcement rather than new layers of stronger rules be the remedy to your concern?

   The AFL-CIO supports better and stronger enforcement of OSHA standards to protect workers from asbestos that is already in the stream of commerce. However, it is our experience that existing standards, and enforcement of these standards is inadequate to ensure that workers are not exposed and placed at risk. Given the health risks posed by asbestos, its long life cycle and the difficulty in controlling exposures, the most effective way to limit future exposures and future disease is to ban the future use of asbestos. Dozens of countries have adopted this approach and banned the future use of asbestos. The United States should do the same.

3. As I read the House Committee Print and the Senate bill, an exemption to the varying forms of the asbestos ban exists for petitioners in two stages. First, EPA has to find that the asbestos-containing product does not (or will not) present a reasonable risk of injury to human health or the environment. On the second step, though, these bills diverge: the Senate bill requires only that a petitioner demonstrate that it has been unable to develop or locate an alternative, but the House bill emphatically prevents exemptions unless no alternative exists. Do you

think good actors and their employees should be punished for having an asbestos containing product that does not pose a risk to the environment and public health, but have been unsuccessful in good faith efforts to developer locate an adequate alternative?

I don't think the Committee Print punishes employers or others. Rather it recognizes that there may parties other than the petitioning party who have knowledge about whether an alternative or substitute exists. Simply because a petitioning party has not been able to identify an asbestos alternative or substitute, does not mean that an alternative doesn't exist, and is no reason to automatically grant an exemption. The process outlined in the House Committee print which calls for 30-day notice and comment is a more open process that will allow additional parties to provide information that will be helpful to the Administrator in determining whether the exemption should be granted.

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U.S. House of Representatives
Committee on Energy and Commerce
Washington, DC 20515–6115

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MARSHA BLACKBURN, TENNESSEE

August 6, 2008

Ms. Linda Reinstein
Executive Director
Asbestos Disease Awareness Organization
1525 Aviation Boulevard, Suite 318
Redondo Beach, CA 90278

Dear Ms. Reinstein:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Ms. Linda Reinstein
Page 2

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

The Honorable John D. Dingell

1. Asbestos Disease Awareness Organization (ADAO) recently tested a number of common household products for asbestos. Could you please tell the Subcommittee why you decided to test these everyday consumer items and how you designed your testing program?

2. What were the results of your testing effort?

3. Did you provide information about the results of these tests for asbestos to the U.S. Environmental Protection Agency (EPA) or any other government agencies? What response, if any, have you received?

4. Through your work with ADAO, and the tragic loss of your husband to asbestos, you have had the chance to observe how exposure to asbestos impacts people fighting diseases caused by this hazardous substance, as well as the effects it has on families. Could you tell us what you have learned in the years that you have worked to raise awareness about asbestos?

5. Would you agree that the one-percent threshold for regulation that was used by the Senate as the standard for the prohibition in S. 742 was established on the basis of analytical ability in 1973 and does not reflect current science?

6. Is the one-percent threshold that was used by the Senate as the standard for the asbestos prohibition in S. 742 protective of public health? If not, please explain why not.

7. Would you agree that to improve the Senate legislation and thereby better protect the public health and the environment from hazards associated with asbestos, the asbestos ban should target any products in which asbestos is intentionally added or present as a contaminant?

Linda Reinstein, Executive Director and Cofounder
Asbestos Disease Awareness Organization (ADAO)
1525 Aviation Boulevard, Suite 318
Redondo Beach, California 90278
Phone 310.437.3886
Email linda@AsbestosDiseaseAwareness.org
www.AsbestosDiseaseAwareness.org

ADAO
Asbestos Disease Awareness Organization™
Voice of the Victims

Linda Reinstein's Answers to Honorable John D. Dingell Questions

Chairman Wynn file attached with full reports and letters.

1. **ADAO was aware of often-quoted claims that some 3,000 products containing asbestos were present on American market shelves, but few proven facts were available.** Since full disclosure from manufacturers is not available, ADAO undertook limited sample testing of a range of products commonly used by American families in their own homes and gardens.

    a) Objective: was to establish some idea of the prevalence of asbestos use and contamination in products that Americans are exposed to every day.

    b) Intention: was to create awareness of this potential risk to human health, so that Americans can protect themselves and work together to reduce this unnecessary risk. T

These intentions and objectives remain unchanged. Tests sponsored by ADAO have included various children's toys, women's cosmetics, household appliances, household cleansers, home repair materials, gardening materials and food products. The products tested to date are by no means fully representative of the myriad of possible product types in which there is potential for asbestos presence and exposure. We hope that our results will encourage other public and private groups to sponsor more extensive research and testing.

2. **The five products confirmed asbestos-containing were:**
    a) Planet Toys CSI Fingerprint Investigation Kit
    b) DAP "33" glazing compound
    c) DAP "Crack Shot" spackling paste
    d) Gardner "Leak Stopper" roof patch
    e) Scotch Brand High Performance Duct Tape

Three independent laboratories confirmed asbestos was present in the above products/toy. These samples of the various products were purchased directly from retail shelves stocked during 2006 and 2007. Testing followed well-established processes for this type of testing. Most products were tested by Transmission Electron Microscopy (TEM), the most reliable method available for the detection of asbestos fibers. Tests on all product samples were repeated in this laboratory to determine the repeatability of results. To provide corroboration and to ensure validity of test methods, both blind samples and samples in original, sealed packaging were provided to other certified laboratories for similar testing. Significant effort was put into achieving similar sample preparation procedures among the laboratories, to ensure comparability of results.

3. **EPA and CPSC Correspondence**

- ADAO hand couriered the EPA and CSPC a complete report of all findings for further evaluation. **NO RESPONSE**
- ADAO contacted EPA and CPSC via fax and phone per our letter. **NO RESPONSE**
- ADAO hand delivered a 2nd report to the EPA per their request. **NO RESPONSE**

NOTE: All correspondence is available upon request.

4. **For each life lost a shattered family is left behind. Prevention is the only cure.** Asbestos exposure and all asbestos-related diseases cause unrecoverable mental, physical and mental devastation.

5. **The EPA 1% threshold for regulation is not a health based number.** Studies and reports confirm asbestos is a human carcinogen and there is no safe level of exposure.

6. **The Senate standard used in S. 742 is not protective of public health.** The 1% rule was based on the detection capability of methods available in the early 1970s. At that time, the government's objective was to determine asbestos content for materials intentionally manufactured with asbestos fibers. This rule is not necessarily applicable to all situations, as pointed out by the EPA in a memo to Superfund managers, dated April 10, 2004):

> *"Recent data from the Libby site and other sites provide evidence that soil/debris containing significantly less than 1 percent asbestos can release unacceptable air concentrations of all types of asbestos fibers (i.e., serpentine/chrysotile and amphibole/tremolite). Currently, many site managers continue to employ the use of the 1 percent threshold to determine if response actions for asbestos should be undertaken. However, based upon scientific discussions and findings reported by EPA and ATSDR from the Libby, Montana Superfund site, as well as EPA's 'Peer Consultation Workshop on a Proposed Asbestos Cancer Risk Assessment 2,' there may be confusion regarding the appropriate use of the 1 percent threshold."*

Current methods generally used for detecting and quantifying asbestos in building materials are guided by the 1% rule simply to allow the use of polarized light microscopy (PLM), which has a measurement resolution, or capability, of 1% by volume. This is no better than the capability of the methods that were available 30 years ago. But PLM is a much less expensive process than transmission electron microscopy (TEM), the method used in the studies reported here. Thus, PLM is a relatively inexpensive way to test the thousands of buildings that need testing, but this method does not reveal asbestos concentrations below 1%, even though these may be hazardous.

7. **All asbestos containing products (ACP) which asbestos is intentionally added should be banned.**

Asbestos Disease Awareness Organization is a registered 501(c) (3) nonprofit volunteer organization
"United for Asbestos Disease Awareness, Education, Advocacy, Prevention, Support and a Cure"
1525 Aviation Boulevard, Suite 318 · Redondo Beach · California · 90278 · 310.437.3886
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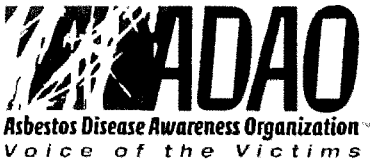

November 28, 2007

Acting Chairman Nancy Nord
Commissioner Thomas Moore
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Re: Results of Product Testing for Presence of Asbestos in Selected Household Products

Dear Chairman Nord and Commissioner Moore:

The Asbestos Disease Awareness Organization (ADAO), an organization of volunteers dedicated to serving as the voice of asbestos victims, respectfully submits the attached report on tests that we have recently completed. These tests have explored the potential presence of asbestos and similarly bio-persistent fibers in everyday household products available on American market shelves.

The attached report is a complete record of our research to date. In summary, we have tested samples of over 250 consumer products purchased from national or regional retail market chains. Scientific Analytical Institute, Inc., (SAI) of Greensboro, NC, served as the primary testing entity under contract to ADAO. We engaged two additional independent laboratories under subcontract to SAI to provide confirmation testing on all products in which SAI found asbestos or related fibers.

SAI's tests revealed asbestiform fibers in 18 products of the 250 tested. Of these, 8 have been confirmed by at least one of the other laboratories, including 5 that have been confirmed by all three. We are releasing the information on these 5 products at a press conference this morning at the National Press Club in Washington, DC.

Along with the potential health hazard posed by these products, we believe that these results point to the possibility that asbestos may be present in many more products found commonly in American homes.

ADAO was founded by asbestos victims and their families in 2004. ADAO seeks to give asbestos victims a united voice to help ensure that their rights are fairly represented and protected, and raise public awareness about the dangers of asbestos exposure and the often deadly asbestos-related diseases. ADAO is funded through voluntary contributions and staffed by volunteers.

We are eager to discuss these results with you, drawing on the expertise of our scientific investigators and advisors. We will plan to contact you on January 15 to arrange a meeting, or please feel free to contact us sooner.

Sincerely,

Paul S. Zygielbaum
Product Testing Project Manager

Linda Reinstein
Executive Director

Enclosure: SAI Report, "Analysis for Asbestos Content in Commonly Available Products"

cc: EPA Administrator Stephen L. Johnson

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www.AsbestosDiseaseAwareness.org

January 14, 2007

Acting Chairman Nancy Nord
Commissioner Thomas Moore
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Administrator Stephen L. Johnson
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Re: Results of Product Testing for Presence of Asbestos in Selected Household Products

Dear Chairman Nord, Commissioner Moore and Administrator Johnson:

Last November 28, we submitted to each of you our report on scientific tests revealing the presence of asbestos and other bio-persistent fibers in certain everyday household products available on American market shelves. We have received no response from either of your organizations.

On that same date, we held a press conference at the National Press Club to announce key findings from our research. Subsequently, the State of Connecticut Department of Consumer Protection independently corroborated our findings in the case of a popular children's toy and issued an embargo on sale of that product in the state. The supporting tests in that case were performed by the Wadsworth Center of the New York State Department of Public Health. We understand that this information has been submitted to CPSC by the State of Connecticut.

Along with the potential health hazard posed by the products that we have identified, we believe that these results point to the possibility that asbestos may be present in many more products found commonly in American homes.

We remain eager to discuss these results with you, drawing on the expertise of our scientific investigators and advisors. In our previous letter, we stated the intent to contact you on January 15 to arrange a meeting to discuss our findings. Please consider this our follow-up, and please inform us as to how we may proceed to set up such a meeting by calling 310.437.3886.

Sincerely,

Paul S. Zygielbaum
Product Testing Project Manager

Linda Reinstein
Executive Director

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TIM MURPHY, PENNSYLVANIA
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MARSHA BLACKBURN, TENNESSEE

August 6, 2008

Dr. Aubrey Miller
Senior Medical Officer & Toxicologist
U.S. Environmental Protection Agency, Region 8
1595 Wynkoop Street
8EPR-PS
Denver, CO 80202

Dear Dr. Miller:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

Honorable John D. Dingell
ATTN: Ms. Linda Good (Fax 202-225-2899 & linda.good@mail.house.gov)
Chairman Committee on Energy and Commerce
US House of Representatives
2322-B Rayburn House Office Building
Washington DC 20515

From: Aubrey Miller, MD, MPH
Chief Medical Officer
US FDA, Office of the Commissioner
Office of Counterterrorism and Emerging Threats
5600 Fishers Lane, HF 29; Rm 14C-26
Rockville, MD

(Formerly Senior Medical Officer and Toxicologist for EPA Region 8)

Dear Congressman Dingell,

Thank you for this opportunity to comment on this extremely important piece of legislation. It is imperative that the United States promulgate a meaningful ban on asbestos to finally protect the public health of workers and citizens from this preventable source of illness and death for thousands of Americans.

Below are my responses to the seven questions posed to me for additional consideration.

1. As part of your testimony at the February 28, 2008, hearing, you stated that studies have been done on chrysotile asbestos and diseases caused by exposure to chrysotile asbestos. Please provide the subcommittee with a list of the studies to which you were referring. Please include the title, author(s), and date of each study.

2. During the February 28, 2008, hearing, Dr. Robert Nolan said the following "Now I am not saying that chrysotile asbestos doesn't cause disease, but mesothelioma is not associated with chrysotile exposures." Are both chrysotile asbestos and amphibole asbestos associated with disease? Please describe the diseases that are associated with exposure to amphibole asbestos, as well as the diseases that are associated with chrysotile asbestos.

3. As part of your February 28, 2008, testimony, you stated that airborne levels of asbestos can be measured easily by disturbing materials that contain low levels of asbestos. Could you please describe the process that is used to disturb materials that contain low levels of asbestos and how the air exposures are then measured? Has this process been used to study airborne exposures in the United States? Could you provide a list of some of the locations or studies that have measured airborne exposures through this process ?

4. Are you aware of studies indicating that exposure to low levels of asbestos may result in asbestos-related disease ? If so, please provide a list of studies regarding low-level exposures and asbestos-related disease to the subcommittee. Please include with this list the title, author(s), and date of each study. Please also summarize the findings of two o three of the leading studies.

5. Would you agree that the one-percent threshold for regulation that was used by the Senate as the standard for the prohibition in S. 742 was established on the basis of analytical ability in 1973 and does not reflect current science?

6. Is the one-percent threshold that was used by the Senate as the standard for the asbestos prohibition in S. 742 protective of public health ? If not, please explain why not.

7. Would you agree that to improve the Senate legislation and thereby better protect the public health and the environment from hazards associated with asbestos, the asbestos ban should target any products in which asbestos is intentionally added or present as a contaminant?

Combined response to questions 1 and 2:

1. *As part of your testimony at the February 28, 2008, hearing, you stated that studies have been done on chrysotile asbestos and diseases caused by exposure to chrysotile asbestos. Please provide the subcommittee with a list of the studies to which you were referring. Please include the title, author(s), and date of each study.*

2. *During the February 28, 2008, hearing, Dr. Robert Nolan said the following "Now I am not saying that chrysotile asbestos doesn't cause disease, but mesothelioma is not associated with chrysotile exposures." Are both chrysotile asbestos and amphibole asbestos associated with disease? Please describe the diseases that are associated with exposure to amphibole asbestos, as well as the diseases that are associated with chrysotile asbestos.*

It is clearly established in the medical and scientific literature that exposure to all forms of asbestos (chrysotile asbestos, as well as, the regulated forms of amphibole asbestos) cause asbestos-related diseases including: lung cancer, mesothelioma, asbestosis, pleural effusions and pleural fibrosis (both circumscribed and diffuse disease).

While some controversy exists with respect to the potency or risks of the differing forms of asbestos in causing one of the asbestos-related diseases; the condition of "mesothelioma", the totality of findings from the numerous experimental, clinical, and epidemiologic studies over the past four decades indicates that exposure to chrysotile asbestos is capable of inducing or contributing to the development of mesothelioma. Thus, Dr. Nolan's statement regarding chrysotile asbestos is not supported by the weight of scientific evidence. Furthermore, Dr. Nolan overlooks the increased risks of lung cancer and pleural disease which are also well established to be associated with exposure to chrysotile asbestos, and are much more prevalent in exposed individuals than mesothelioma.

Throughout that time, many governmental organizations have thoroughly reviewed reams of published data and have concluded that all fibers types are capable of causing mesothelioma in workers. Several publications highlight the fact that the majority of the world medical community considers chrysotile to be a cause of mesothelioma. In 1997, a multi disciplinary gathering of pathologists, radiologists, occupational and pulmonary physicians, epidemiologists, toxicologists, industrial hygienists, and clinical and laboratory scientists held a meeting in Helsinki, Finland to agree upon criteria for attribution of disorders of the lung and pleura in association with asbestos. Collectively, the group had published over 1000 articles on asbestos and asbestos-associated disorders. The consensus of the group was that "With the exception of certain histological types of mesotheliomas that are benign or of uncertain or borderline malignant potential . . . . all types of malignant mesothelioma can be induced by asbestos, with the amphiboles showing greater carcinogenic potency than chrysotile." (Tossavainen, A. et al. Consensus Report, "Asbestos,

asbestosis, and cancer: the Helsinki criteria for diagnosis and attribution," Scand. J. Work Environ. Health, 1997; 23: 311-316.)

Another notable publication was a monograph devoted specifically to chrysotile asbestos that was prepared by the International Programme on Chemical Safety (IPCS) in conjunction with the World Health Organization. After an extensive review of the world's literature, this body concluded that "commercial grades of chrysotile have been associated with an increased risk of pneumonoconiosis, lung cancer and mesothelioma in numerous epidemiological studies of exposed workers." (IPCS. Environmental Health Criteria 203: Chrysotile Asbestos, International Program on Chemical Safety, World Health Organization. 1998.).

The International Agency for Research on Cancer (IARC), a part of the World Health Organization, came to similar conclusions in 1976. The Monograph concluded, "All commercial forms of asbestos tested are carcinogenic in mice, rats, hamsters and rabbits." And also "Many pleural and peritoneal mesotheliomas have been observed after occupational exposure to crocidolite, amosite and chrysotile." These conclusions, on man, were based on the epidemiological studies of various exposed cohorts (IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man - Asbestos Volume 14. International Agency for Research on Cancer, World Health Organization, Lyon, 1977). This continues to be the position of IARC (http://www.inchem.org/documents/iarc/suppl7/asbestos.html (last updated 6 February 1998 and accessed September 2008)), as well as, every involved regulatory and Public Health agency of the United States including the Environmental Protection Agency, Occupational Safety and Health Administration, and the Centers for Disease Control and Prevention (National Institute for Occupational Safety and Health & Agency for Toxic Substances and Disease Registry).

Additional references for response (Questions 1 & 2) which discuss the asbestos-related diseases, including mesothelioma, associated with exposure to chrysotile and amphibole asbestos include:

Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Toxicological profile for Asbestos. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

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Osinubi O, Gochfeld M, Kipen HM. Health Effects of Asbestos and Non-asbestos Fibers. Environ Health Perspect. 2000:108(suppl 4):665-674.

U.S. EPA. 1986. Airborne Asbestos Health Assessment Update. Prepared by the Environmental Criteria and Assessment Office, Research Triangle Park, NC. EPA 600/8-84/003F.

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Response to Question 3.

3. *As part of your February 28, 2008, testimony, you stated that airborne levels of asbestos can be measured easily by disturbing materials that contain low levels of asbestos. Could you please describe the process that is used to disturb materials that contain low levels of asbestos and how the air exposures are then measured? Has this process been used to study airborne exposures in the United States? Could you provide a list of some of the locations or studies that have measured airborne exposures through this process ?*

Historically, asbestos has been addressed by applying the definition of asbestos-containing material (ACM) contained in the National Emissions Standard for Hazardous Air Pollutants (NESHAP). This approach may not be a reliable mechanism for assessing potential human health hazards from asbestos exposure associated with disturbance of asbestos contaminated soils. The exposure route of chief concern for asbestos is inhalation of asbestos fibers in air (Oliver 1991). Numerous studies have reported discrepancies between airborne concentrations measured using stationary monitors and personal exposure monitors. These discrepancies have been attributed to near field or proximity effects where pollutant sources proximal to the subject exhibit strong spatial concentration gradients and local aerodynamic fields (eddy currents, advection, microclimates, surface roughness, etc.) that influence sampler bias. Studies at several asbestos sites have demonstrated that, in cases where asbestos-contaminated source material is actively disturbed by an individual, the personal air samples consistently yield higher measurements than stationary air samples in the same vicinity (Doll 1985; HEI 1991; Lang 2000; EPA 2003; Sakai 2006). Activity Based Sampling, an empiric approach in which airborne concentrations of asbestos are measured rather than predicted or modeled, may be the most appropriate method available for assessing potential exposure to asbestos from contaminated environmental media. Further, this is approach is especially helpful given the difficulties of measuring low concentrations (<1%) of asbestos in bulk materials and the inability to adequately predict human exposures and associated health risks from such contaminated materials (see response to Questions 5 and 6 below).

The National Institute of Occupational Safety and Health (NIOSH) indicates that the preferred measure of actual exposure to an individual is through the collection of personal air samples (NIOSH 1977). Additionally, personal monitoring is a standard method used by industrial hygienists to evaluate workplace exposures. The occupational and environmental hygiene literature contains many papers describing how the concentration of pollutants changes in space, particularly in the personal space close to people (Flynn and George, 1991; Kim and Flynn, 1991a; Rodes et al., 1991, 1995). Changes in local concentration can arise even when the far-field concentration is uniform, and particularly when local or general ventilation interacts with the human body (Flynn et al., 1999; Kim and Flynn, 1992; Smith and Bird, 2002). In real workplaces the aerosol concentration is never uniform, as particles are generated by localized work activity (Lidén and Kenny, 1994; Kim and Flynn, 1991b). Traditionally, area samples have not been considered to adequately represent the potential exposure to an individual and have been reported to exhibit lower fiber concentrations than personal samples

(Sherwood, 1966; Linch et al., 1970; Linch and Pfaff, 1971; Leidel et al., 1977; Sawyer et al., 1985; Niven et al., 1992).

Measurements of fiber concentrations in air that are based on personal air monitors are generally preferred over stationary air monitors, since the personal monitors more accurately reflect the concentration of asbestos in the breathing zone of the exposed person and ultimately the risks associated with performing activities in the actual environmental setting of interest. A personal monitor approach that can provide data for risk assessment and is emphasized in EPA's newly drafted asbestos site assessment framework is activity based sampling (ABS). ABS is applicable to the assessment of both outdoor soil and indoor dust.

Since personal monitoring is more representative of actual exposure than samples obtained from a fixed downwind location (Hildemann 2005), personal monitoring results are generally most relevant to CERCLA risk characterization. However, at CERCLA sites, it is neither always possible nor practical to do so. EPA has thus developed a sampling procedure called Activity Based Sampling, designed to mimic the activities of a potential receptor. As part of Activity Based Sampling, U.S. EPA or contractor personnel trained in hazard recognition and mitigation, serve as surrogates for the potentially exposed populace of interest. Activity Based sampling simulates routine activities in order to mimic and evaluate or predict personal exposures from disturbance of potentially contaminated materials. Similar sampling approaches have been used to assess exposures to pesticides and lead (EPA/600/R-00/068) and this technique has long been a cornerstone of industrial hygiene wherein workplace exposures are routinely assessed via personal exposure monitoring.

Sites in the United States where EPA has performed Activity Bases Sampling to determine asbestos exposures and risks associated with disturbance of contaminated soils, dusts, or other bulk materials:

Waukegan, Il
Quincy Smelter, MI
El Dorado, CA
Clear Creek Management Area, CA
Coalinga, CA (5-year review)
Lowry Air Force Base, CO
N-forcer Site, Detroit (Dearborne) MI.
Libby, MT
Ambler, AK
North Ridge Estates, OR
Swift Creek, WA
Troy, MT
Sapphire Asbestos Mine, NC
Illinois Beach State Park, IL
Alviso, Ca
Borit, PA

Big Tex, TX
Lupe Road, WY (24-hr sampling, not true ABS)
Pueblo, CO (Libby vermiculite home)
Cappadocia, Turkey (erionite primary contaminant of concern although asbestos was found)
Dunn County, ND (erionite primary contaminant of concern although asbestos was found)

References for Response to Question 3:

Doll, R., and Peto, J. 1985. Effects on Health of Exposure to Asbestos. Her Majesty's Stationary Office, London.

EPA. 2003. Final Draft Pilot Study To Estimate Asbestos Exposure From Vermiculite Attic Insulation: Research Conducted in 2001 and 2002. Office of Pollution Prevention and Toxics. Prepared by Versar, Inc. May 2003.

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(NIOSH 1977) National Institute for Occupational Safety and Health (NIOSH). 1977. Occupational Exposure Sampling Strategy Manual. DHEW (NIOSH) Publication No. 77-173. U. S. Government Printing Office, Washington, D.C.

Sakai, K., Hisanaga, N., Shibata E., Ono Y., and Takeuchi, Y. 2006. Asbestos Exposures During Reprocessing of Automobile Brakes and Clutches. Int. J. Occup. Health 12:95-105.

Oliver, L. C, Sprice, N. L. and Greene, R. E. (1991). Asbestos related disease in public school custodians. Am. J. ind. Med 19, 303-316.

Response to Question 4.

4. *Are you aware of studies indicating that exposure to low levels of asbestos may result in asbestos-related disease ? If so, please provide a list of studies regarding low-level exposures and asbestos-related disease to the subcommittee. Please include with this list the title, author(s), and date of each study. Please also summarize the findings of two o three of the leading studies.*

The medical community may conventionally classify a heavy or high exposure as one which is equivalent to the intensity of a direct workplace exposure. It is currently unclear what constitutes a "low-level" of exposure to asbestos as no exposure threshold has been identified below which there is no increased risk of asbestos-related disease. In this vain the public health community has consistently recommended that exposures to carcinogens such as asbestos be limited to the lowest feasible concentration. Most quantitative risk assessments have focused on workers with highly elevated asbestos exposures compared to non-worker populations. While, sufficient information for quantitative risk assessment has typically been lacking for lower exposed cohorts, ample evidence exists to indicate that even "lower level" exposures (i.e., non-occupational) to asbestos can result in increased risk for asbestos-related disease.

It is well documented in the medical literature that while the risk for mesothelioma increases with increasing exposure, the risk is very real and palpable even at very low exposure levels.

> *An excerpt from Asbestos and Disease; Selikoff and Lee; Academic Press 1978 (p. 265-6)). The uncertainty about the role played by asbestos in the initiation of mesothelioma was accentuated by the small quantity of the dose that, in many persons at least, is sufficient. The sufficient dose, moreover, need not come from direct occupational exposure. As Wagner et al pointed out in their initial paper, one-third of their cases had merely lived in the vicinity of asbestos mines and mills. One case, 21 years of age, had been exposed briefly to cobbing as an infant. Elmes found that in one third of his cases that the exposure was virtually trivial. Harries found that 53 of 55 cases in the Royal Navy shipyards occurred in those only peripherally exposed, while Planteydt found that none of the cases seen from Dutch shipyards were directly exposed to asbestos. Demy and Adler drew attention to one case in which exposure was only six months, while one of Newhouses cases had been exposed for only two months.*

Beyond published case-series, epidemiologic studies have found that non-occupational or environmental asbestos exposures increase the risk for mesothelioma. A case-control study found significantly increased risks from environmental asbestos exposure among residents living near an asbestos cement factory in Italy (Magnani 2001). A multicentric study performed by researchers in Spain, Italy, and

Switzerland found that low-dose exposures to asbestos at home or in the environment carries a significant risk of mesothelioma (Magnani 2000).

Another study found significantly increased rates of mesothelioma from environmental asbestos exposure among residents living near a crocidolite mine in Australia (Hansen 1998). This study involved exposure to crocidolite among residents of the township of Wittenoon in Western Australia. Among the 24 individuals identified with mesotheliomas associated only with environmental exposures, their residence in Wittenoon ranged from 6 weeks to 11 years. Five individuals lived in the township for no more than one year. Cases of mesothelioma in this cohort of Wittenoom residents have arisen in subjects with durations of crocidolite exposure as short as 2 months and estimated cumulative exposure as low as 0.53 fibers/ml-years (Hansen 1998). A recent follow-up study of this cohort, identified 67 mesotheliomas among former residents of Wittenoom who had not been exposed to asbestos occupationally at the Wittenoom mine or mill, or elsewhere. The median duration of residence was 20 months with 35% staying for < 1 year. The estimated mean cumulative exposure to asbestos was 5.5 fibers/ml-years (Reid 2007). Based on the results from this study, "if one assumes the background death rate from mesothelioma is one case per million person-years, and further assuming that the risk is a linear dose-response with no identifiable threshold, then the exposure to Wittenoom asbestos doubles the background risk for mesothelioma at a cumulative level of 0.015 fibers/ml-year". This is equivalent to approximately 2 months of exposure at the current US Occupational Safety and Health Administration (OSHA) permissible exposure limit for workers (i.e., 0.1 fibers/ml) (Roggli 2007).

The prevalence of pleural abnormalities in non-occupationally exposed populations has also been well documented. Although several groups, such as household contacts, are unlikely to have had exposures as high as those of the workers in the family, they have been found to have high levels of pleural abnormalities (Anderson 1979; Kilburn 1985). Studies of household contacts of asbestos-exposed workers have also reported an increased prevalence of asbestos-related pleural abnormalities ranging from 3.5% for household contacts of shipyard workers (Kilburn, 1985) to 19% for household contacts of workers producing amosite asbestos products (Anderson 1979). Navratil (Navratil 1972) found the prevalence of pleural calcifications was 5.3, 3.5, and 0.34% in chrysotile factory workers in Czechoslovakia, household contacts, and the general population with no known asbestos exposure, respectively. Investigators from Mount Sinai School of Medicine studied the household contacts of 1,664 amosite asbestos workers who manufactured thermal insulation. The prevalence of pleural and interstitial asbestos-related abnormalities was 48% among wives, 21% among daughters, and 42% among sons. The prevalence of radiographic abnormality associated with secondary exposure was 35% vs. 5% expected, based on the comparison population ($p<0.001$). Further, household contacts of former asbestos workers who entered the home only after cessation of employment were at significantly increased risk of pleural abnormality (12% observed vs. 2% expected; $p<0.02$) (Anderson 1979).

Studies of groups of modern asbestos workers, who likely were exposed to lower airborne concentrations of asbestos fibers than were workers in the first half of the 20th century, found that the prevalence of pleural abnormalities is often up to 10 times greater than the prevalence of interstitial abnormalities (Becklake 1994; Orlowski 1994). In a recent follow-up study of workers in Marysville, Ohio that processed vermiculite originating from Libby, Montana, found significant pleural chest abnormalities 25 years after cessation of exposure. Exposures to asbestos from the contaminated vermiculite resulted in pleural thickening at low lifetime cumulative fiber exposures of less than 2.21 fiber/cc-years, which is below the current OSHA permissible exposure level standard over a 45-year working life (4.5 fiber/cc-years) (Rohs 2008).

References for response to Question 4:

Anderson, H. A., Lilis, R., Daum, S. M., & Selikoff, I. J. 1979a, "Asbestosis among household contacts of asbestos factory workers", Ann.N.Y.Acad.Sci., vol. 330, pp. 387-399.

Becklake, M. R. 1994a, "Symptoms and pulmonary functions as measures of morbidity", Ann.Occup.Hyg., vol. 38, no. 4, pp. 569-80, 418.

Hansen J, de Klerk NH, Musk AW, Hobbs MST. Environmental exposure to crocidolite and mesothelioma: exposure-response relationships. Am J Resp Crit Care Med 1998;157:69-75.

Kilburn, K. H., Lilis, R., Anderson, H. A., Boylen, C. T., Einstein, H. E., Johnson, S. J., & Warshaw, R. 1985a, "Asbestos disease in family contacts of shipyard workers", Am.J.Public Health, vol. 75, no. 6, pp. 615-617.

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Roggli V. Environmental asbestos contamination: what are the risks? Chest 2007; 131;336-338

Rohs AM, Lockey JE, Dunning KK, et al. Low-level fiber-induced radiographic changes caused by Libby vermiculite: a 25-year follow-up study. Am J Respir Crit Care Med. 2008 Mar 15;177(6):565-6.

Response to Questions 5 and 6.

5. *Would you agree that the one-percent threshold for regulation that was used by the Senate as the standard for the prohibition in S. 742 was established on the basis of analytical ability in 1973 and does not reflect current science?*

6. *Is the one-percent threshold that was used by the Senate as the standard for the asbestos prohibition in S. 742 protective of public health? If not, please explain why not.*

It is my understanding that the one-percent threshold used by the Senate in S. 742 was taken from the TSCA definition of "asbestos containing material (ACM)." The current
TSCA definition (15 USC 2642(4)) only includes asbestos material which "contains more than 1% asbestos by weight." Per a 2004 EPA memo from former EPA Superfund Director Michael Cook, to all Superfund National Policy Managers in the US Regions (EPA 2004), the 1 percent threshold for asbestos-containing materials was first used in the 1973 National Emissions Standards for Hazardous Air Pollutants (NESHAP), where the intent of the threshold was originally:

> *"....to ban the use of materials which contained significant quantities of asbestos, but to allow the use of materials which would: (1) contain trace amounts of asbestos which occur in numerous natural substances, and (2) include very small quantities of asbestos (less than 1 percent) added to enhance the materials effectiveness.*

All subsequent EPA regulations included this 1 percent threshold. In the 1990 NESHAP revisions, EPA retained the threshold, stating that it was related to the phase contrast microscopy (PCM) detection limits. The wide use of the 1% threshold in regulations may have caused site managers to assume that levels below the threshold did not pose and unreasonable risk to human health. However, it is important to note that the 1 percent threshold concept was related to the limit of detection for the analytical methods available at the time and also to EPA's prioritization of resources on materials containing higher percentages of asbestos" (EPA 2004).

Thus, the 1% threshold and ACM definition reflected widely available analytical capabilities at the time as labs couldn't identify smaller amounts in solid media with any accuracy nor were the risks, and associated priorities, concerning such materials well understood. As discussed in the EPA memo (EPA 2004), EPA scientists and others have come to fully recognize that a 1% threshold level of asbestos contamination of materials discussed in U.S. regulations is not a health based number, and is not necessarily protective of individuals that may come into contact with such contaminated material or products. Publicly available studies and a plethora of data collected by EPA investigators has shown that products and bulk materials, such as soils and Libby vermiculite, with asbestos contamination well below the 1% asbestos by weight level (even non-detectable concentrations using polarized light microscopy (PLM)) can still generate very dangerous airborne levels of asbestos exposure when disturbed. Airborne exposures appear to depend upon the nature of the contaminated material, environmental conditions, and the disturbance activity involving the material (e.g., shoveling contaminated soils or indoor sweeping of contaminated dusts). Exposures associated with disturbance of such materials (<1% asbestos contamination) can be very hazardous and may easily exceed the OSHA Short Term Exposure Limit (STEL) of 1.0 fibers/cc (maximum exposure level not to be exceeded for more than 30 minutes for trained workers wearing appropriate personal protective equipment). For example, in 1997, Pinchon Environmental Ltd. were hired by the Canadian Defense Department to conduct a safety assessment for removing vermiculite attic insulation (VAI). This product, reported by the manufacturer to be less than 1% asbestos, was demonstrated in this study to generate extremely high airborne asbestos concentrations. On Page 10 of the report the authors state: "[d]espite the relatively low concentration of asbestos in the vermiculite insulation, the uncontrolled removal of this product was demonstrated to result in excessive exposures to airborne asbestos. All countable air samples were greatly in excess of provincial or federal asbestos exposure limits" (Pinchon 1997).

In view of this information, the EPA Superfund Program recommends using site-specific, risk based decisions based on risks of actual exposure and not the level of material/bulk contamination for assessing all asbestos contaminated sites nationwide (EPA 2004). Implementation of a meaningful national ban of asbestos should also be based on EXPOSURE and not based on product content. Fortunately, advances in analytical technology now enable us to identify much smaller amounts of asbestos in solid media using transmission electron microscopy (TEM) which is now readily available and are

routinely being used for asbestos evaluations nationwide by both the private and public sectors. Also, and more importantly from a public health perspective, we can easily determine the airborne exposure hazard for products containing less than 1% asbestos by weight (ie., air testing of products during use or disturbance). Some of the approaches currently being used by EPA for evaluating the potential airborne exposures from contaminated bulk materials are discussed in my response to Question 3 (above); depending on the circumstances, various other strategies and options can be readily employed to obtain useful information about a material or products propensity to release asbestos to the air (i.e., exposure) under normal conditions of usage or disturbance.

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Addison J, Davies LST, Robertson A, Wiley RJ, 1988, The Release of dispersed asbestos fibres from soil, Report No. TM/88/14, Edinburgh: Institute of Occupational Medicine.

Analysis for Asbestos Content in Commonly Available Products. Asbestos Disease Awareness Organization (ADAO) Product Testing Report #02. Scientific Analytic Institute, Inc.; November 7, 2007.

EPA Region 10, 2000. Sampling and Analysis of Consumer Garden Products That Contain Vermiculite. EPA Region 10 Investigation of Asbestos in Vermiculite. EPA 744-R-00-010; August 2000.

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Versar, 2002. Asbestos Exposure Assessment For Vermiculite Attic Insulation: Cumulative Study Covering Research Conducted in 2001 and 2002. US EPA, Fibers and Organics Branch National Program Chemicals Division, Office of Pollution Prevention and Toxics. June 28, 2002.

US EPA Office of Pesticides and Toxic Substances. Analysis of fiber release from certain asbestos products. Contract No. 68-01-5960. Technical Directive No. 15. December 1982. (Prepared by GCA Corporation).

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Pinchin Environmental 1997. Final report site assessment vermiculite removal, Building E-12 C.F.B. Shilo, Shilo, Manitoba. Prepared for Department of National Defense Base Construction Engineering, Canadian Forces Base Shilo, Shilo, Manitoba.

Response to Question 7.

7. Would you agree that to improve the Senate legislation and thereby better protect the public health and the environment from hazards associated with asbestos, the asbestos ban should target any products in which asbestos is intentionally added or present as a contaminant?

I strongly concur that any legislative ban of asbestos to meaningfully protect public health and the environment should target any products in which asbestos is intentionally added or present as a contaminant. This statement is supported by my previous answers to questions 1-6.

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August 6, 2008

Richard A. Lemen, Ph.D
Assistant Surgeon General (ret.)
U.S. Public Health Service
241 Rose Ridge Court
Canton, GA 30115

Dear Mr. Lemen:

Thank you for appearing before the Subcommittee on Environment and Hazardous Materials at the February 28, 2008, hearing entitled, "Legislative Hearing on S. 742 and Draft Legislation to Ban Asbestos in Products." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached are questions from subcommittee Members for inclusion in the record. In preparing your answers to these questions, please include the text of the questions along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received by no later than the close of business on **Wednesday, August 20, 2008**. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Linda Good. An electronic version of your response should also be sent by e-mail to Ms. Good at **linda.good@mail.house.gov**. Please send your response in a single Word or WordPerfect formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Linda Good at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Gene Green, Chairman
Subcommittee on Environment and Hazardous Materials

The Honorable John Shadegg, Ranking Member
Subcommittee on Environment and Hazardous Materials

The Honorable John D. Dingell

1. Asbestos has been classified as a known human carcinogen by the World Health Organization, the United States Environmental Protection Agency (EPA), and other organizations and governmental agencies. Please provide approximate figures for the number of:

    a. American lives lost each year to asbestos-related diseases. If possible, please identify each disease included in your calculations.

    b. New cases of mesothelioma, a "marker" disease for asbestos exposure, diagnosed each year.

    c. Other asbestos-related disease cases diagnosed each year.

2. With regard to your response to question one, would you characterize these as conservative estimates of the human toll attributable to asbestos exposure? If so, please describe why you believe that to be the case.

3. According to EPA, the one-percent threshold for asbestos content was adopted in the early 1970's based on "the limit of detection for the analytical methods available at the time" and "EPA's prioritization of resources on materials containing higher percentages of asbestos." (August 10, 2004 Memorandum from Michael B. Cook, Director, Office of Superfund Remediation and Technology Innovation to Superfund National Policy Managers, Regions 1-10) Please describe the major advances in asbestos analytical technology since the early 1970's.

    a. Have such advances been widely adopted by private industry and governmental organizations in order to detect asbestos in materials, supplies and products?

    b. Is there a significant number of private, commercial, and governmental laboratories trained and certified in the use of these technologies and test methods?

4. Is the one-percent threshold that was used by the Senate as the standard for the asbestos prohibition in S. 742 protective of public health? If not, please explain why not.

4. Are you familiar with "cleavage fragments"? Could you explain what people mean when they use the term? Are you familiar with any studies related to analytical testing of cleavage fragments? Is there information available related to the health effects of materials that might contain fibers that are referred to as cleavage fragments?

5. Would you agree that to improve the Senate legislation and thereby better protect the public health and the environment from hazards associated with asbestos, the asbestos ban should target any products in which asbestos is intentionally added or present as a contaminant?

The Honorable Joe Barton

1. Please substantiate your statements that cleavage fragments pose a similar threat to human health and the environment as do asbestiform minerals, and provide references to all those studies -- that may not have already been offered to the committee – on which you rely to support this conclusion.

2. Are you aware of the NIOSH's draft "roadmap" regarding scientific research? Is it not true that the "roadmap" indicates that there is scientific uncertainty regarding any health effects caused by exposure to cleavage fragments and non-asbestiform minerals?

3. I recognize that this question might seem extreme, but I wanted to ask it since you have such strong opinions about asbestos and its regulation. Do you believe that, in the interest of public health, the EPA should seek to remediate under the Comprehensive Environmental Response Compensation and Liability Act all known formations of naturally occurring asbestos?

4. You mentioned the European Union (EU) in your testimony regarding the chlor-alkali industry. As it has been relayed to me, the EU has just completed a comprehensive review of its exemption for use of asbestos diaphragms in the chlor-alkali industry and determined that that exemption should continue indefinitely. According to the European Commission, as part of that review process the EU reviewed extensive information which indicated that:

   * in many cases substitute materials were not feasible for existing facilities and all situations;

   * conversion to high-voltage asbestos-free operation would not be economically viable; and

   * there is no risk to workers from the use of asbestos diaphragms in these installations.

   Do you have any reason to believe these reviews were faulty or the European Union uses poor scientific methods in evaluating environmental problems?

Testimony of James B. Gulliford, Assistant Administrator
Office of Prevention, Pesticides and Toxic Substances
House Committee on Energy & Commerce
Subcommittee on Environment and Hazardous Materials

February 28, 2008

Good afternoon, Chairman Wynn, Vice Chair Solis, Ranking Member Shadegg, and members of the Subcommittee. Thank you for the opportunity to speak before this Subcommittee on behalf of the Environmental Protection Agency. I am here today to discuss efforts to address the continued presence of asbestos in products and materials still in use in the U.S. Despite the common misperception that asbestos is banned, it does remain legal today, with certain exceptions, to manufacture, import, process, and use asbestos-containing products. However, imports and domestic uses of raw asbestos have been steadily declining. Nevertheless, the well-known adverse health effects that can result from exposure to asbestos continue to make its presence and availability a matter of concern. We believe a legislative approach to address this issue may be one effective way of further reducing the risks from asbestos, provided it is carefully crafted and effectively focuses on actions that will result in risk reduction. We look forward to working with the Subcommittee on this important issue.

Asbestos Today

As the Subcommittee is aware, asbestos is the name given to a number of naturally occurring fibrous minerals mined for their useful properties of heat resistance and fiber strength. Asbestos is a human carcinogen. Exposure to asbestos can be harmful to human health if asbestos fibers are inhaled into the lungs. Asbestos is made up of microscopic bundles of fibers that may become airborne when asbestos-containing materials are damaged or disturbed. When these fibers get into the air they may be inhaled into the lungs, where they can cause significant

health problems. These fibers can come from naturally occurring sources of asbestos or from the wearing down or disturbance of manufactured products including insulation, automotive brakes and clutches, ceiling and floor tiles, dry wall, roof shingles, and cement. Fibers embedded in lung tissue over time may cause diseases such as asbestosis (a slow buildup of scar-like tissue in the lungs and in the membrane that surrounds the lungs), lung cancer and mesothelioma, a cancer of the thin membrane that surrounds the lung and other internal organs. These diseases do not develop immediately following exposure to asbestos, but appear only after a number of years. There is also some evidence from studies of workers that breathing asbestos can increase the chances of getting cancer in other locations (for example, the stomach, intestines, esophagus, pancreas, and kidneys), but this is less certain. Lung cancer is usually fatal, while mesothelioma is almost always fatal, often within a few months of diagnosis.

The National Institute for Occupational Safety and Health (NIOSH) tracks annual asbestosis deaths since 1968 and malignant mesothelioma deaths since 1999. Their data indicate that asbestosis deaths increased almost 20-fold from the late 1960s to the late 1990s. Currently there are nearly 1,500 asbestosis deaths per year. Mesothelioma deaths have increased from 2,485 in 1999 to 2,657 in 2004. It is important to note that the latency period between exposure and the onset of diseases is typically long, often measured in decades.

Asbestos has been used in a wide range of manufactured goods, including building materials like roofing shingles, ceiling and floor tiles, paper and cement products, textiles, coatings, and in friction products such as automobile brake, clutch and transmission parts. Asbestos is no longer mined in the U.S. The U.S. Geological Survey reports that the U.S. is totally dependent on imports to meet manufacturing needs. In 2007, imports of raw asbestos for domestic use decreased to an estimated 1,820 tons in 2007 from 2,230 tons in 2006. This reflects a long decline in imports of raw asbestos. Consumption of the raw imported asbestos in the U.S. was estimated

to be 84% for roofing products and 16% for other applications. There is anecdotal evidence from some manufacturers indicating their use of asbestos has declined.

Comprehensive information is not available on imports of asbestos-containing products or the current level of human exposure to the asbestos in those products. Trade data suggest that product categories which may include asbestos-containing products continue to enter the U.S., such as brake and friction products and roofing materials, but the percentage that is asbestos-containing has not been firmly estimated.

Asbestos continues to be found in buildings across the U.S. EPA advises asbestos should be managed in place so that it is contained, intact, and undisturbed, preventing exposure to asbestos fibers that could be released with an improper removal. Removal of asbestos from buildings is regulated to ensure the material is handled safely by trained professionals and does not present a risk of exposure to individuals during removal and disposal.

Overall, evidence suggests declining use of asbestos in the U.S., but exposure to asbestos, particularly in workplaces, remains a public health concern due to its continued use and presence in buildings and products. While disease rates may decline over time as use declines, given the severity and negative outcomes associated with asbestos-related diseases, further actions to address the remaining uses will further speed the decline of future incidents of disease.

Federal Efforts to Address Asbestos

For decades, a number of federal agencies have regulated asbestos-containing products, wastes and releases, and this work has resulted in significant reduction in exposures. In recognition of the public health risk that can result from exposure to asbestos, in 1989 EPA promulgated final regulations under Section 6 of the Toxic Substances Control Act (TSCA) to ban and phase out asbestos in most products. However, in 1991, the U.S. Court of Appeals for the 5th Circuit overturned portions of the Agency's Asbestos Ban and Phaseout Rule. Following the Court

ruling, only a few asbestos uses remain banned, along with "new uses" of asbestos.. The banned uses represented products which were likely to contain intentionally added asbestos above one percent. It is my understanding that the Agency chose not to pursue further rulemaking to address the remaining uses of asbestos, in part due to efforts to address other priority asbestos concerns such as implementation of the asbestos in schools program, which included a substantial grant program for schools. However, we feel the ban attempt had a positive effect because it both prevented any new uses and helped increase awareness of where asbestos might be found.

EPA continues its focus on reducing asbestos exposure and risks in other priority areas. The TSCA asbestos program has focused on preventing and addressing asbestos hazards in schools under the Asbestos Hazard Emergency Response Act and its amendments. This approach is designed to prevent asbestos exposure by teaching people to recognize asbestos-containing materials and actively monitor and, where necessary, manage them in place. Removal is not usually necessary unless the material is damaged or will be disturbed by a building demolition or renovation project. EPA also regulates the release of asbestos from factories and during building demolition or renovation under to the Clean Air Act. In a number of instances, where environmental releases or threatened releases substantially endangers public health or the environment, EPA performs asbestos cleanups under the Superfund program. One of the largest asbestos remediation efforts at the Agency is the asbestos contamination problem involving Superfund at the Libby, Montana site. EPA has been working in Libby since 1999 when an Emergency Response Team was sent to investigate local concern and news articles about vermiculite contaminated with asbestos and other similar fibers. Since that time, EPA has been working closely with the community to clean up contamination and reduce risks to human health. In addition to the Libby site, the EPA Superfund Program has been addressing numerous sites which processed vermiculite from the Libby mine and other asbestos contaminated sites around

the country. The situation at Libby clearly generated a renewed focus on asbestos, not just at EPA but by concerned citizens and here in Congress.

Improving Our Understanding of Asbestos

Many questions remain about asbestos, including in areas such as toxicology, epidemiology, and exposure assessment. EPA appreciates that the Senate legislation places an emphasis on cooperative Federal research, led by the National Institute for Occupational Safety and Health. NIOSH has already taken the lead in developing a Federal roadmap for asbestos research.

EPA has a number of ongoing activities to address uncertainties that include both the conduct of research to address data gaps associated with health effects and the assessment of risks from exposure to asbestos and related materials. As one example, the Office of Solid Waste and Emergency Response, the Office of Research and Development, and EPA Region 8 are currently conducting a toxicity assessment for the mixture of fibrous amphibole asbestos minerals found in Libby. Although focused on Libby-specific effects, we anticipate that the knowledge developed will be helpful to advance the state of the science for asbestos nationwide. Aggressive efforts to resolve the remaining questions about asbestos are integral to protecting public health and the environment from the risks of asbestos exposure.

Legislative Approaches to Asbestos

EPA believes that asbestos does not belong in products when safer and equally efficacious and cost-effective substitutes exist. After preliminary review, we have concerns with some provisions in the draft bill, such as the provision related to aggregates and the compliance testing requirement, and may have additional concerns after the administration completes its review. We look forward to providing technical assistance as the Committee continues its efforts.

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