

**A LEGISLATIVE HEARING ON S. 4244, LEGISLA-  
TION TO PROHIBIT THE MANUFACTURE, PROC-  
ESSING, AND DISTRIBUTION IN COMMERCE OF  
ASBESTOS**

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**HEARING**

BEFORE THE

SUBCOMMITTEE ON CHEMICAL SAFETY,  
WASTE MANAGEMENT, ENVIRONMENTAL JUSTICE,  
AND REGULATORY OVERSIGHT

OF THE

COMMITTEE ON  
ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

JUNE 9, 2022

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COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

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**THURSDAY, JUNE 9, 2022**

U.S. SENATE,  
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,  
SUBCOMMITTEE ON CHEMICAL SAFETY, WASTE MANAGEMENT,  
ENVIRONMENTAL JUSTICE, AND REGULATORY OVERSIGHT,  
*Washington, DC.*

The Committee met, pursuant to notice, at 10:01 a.m. in room 406, Dirksen Senate Office Building, Hon. Jeff Merkley (Chairman of the Subcommittee) presiding.

Present: Senators Merkley, Wicker, Carper, Markey, Kelly, and Ernst.

**OPENING STATEMENT OF HON. JEFF MERKLEY,  
U.S. SENATOR FROM THE STATE OF OREGON**

Senator MERKLEY. The hearing will come to order.  
Welcome.

Today's meeting is a hearing of the Subcommittee on Chemical Safety, Waste Management, Environmental Justice, and Regulatory Oversight. It is intended to enable members to hear and consider testimony from stakeholders in regard to Senate Bill 4244, the Alan Reinstein Ban Asbestos Now Act. I want to welcome the Committee members who will hopefully be trickling in, but particularly our witnesses who are here to share their insights, knowledge, and experiences.

I particularly want to recognize and welcome Linda Reinstein, whose husband, Alan Reinstein, the bill is named after.

As my colleagues are aware, this is a bill which I have authored with Congresswoman Suzanne Bonamici to amend the Toxic Substances Control Act, or TSCA, to prohibit the manufacture, processing, and importation of asbestos. For generations, we have known the harmful and lethal effects of asbestos and the grave threat it poses to public health, from lung cancer to mesothelioma, to ovarian cancer, larynx cancer, and chronic asbestosis.

Any expert will convey that there is no level of exposure to asbestos that is safe for the human body. That is why all of the major countries of the developed world, over 60 nations, have acted to protect their citizens by banning the commercial use of asbestos.

Here in the United States, however, we have failed to do the same. And because we have failed to do so, too many of our fellow

Americans are forced to sit at a loved one's bedside, watching as they become another victim of these deadly fibers. It is estimated that in 2019 alone, over 40,000 Americans were lost due to their exposure to this carcinogen. They are fire fighters who have been exposed while trying to save families from burning buildings, construction workers exposed on the job site, ordinary Americans who just happened to be in the wrong place breathing the wrong air at the wrong time.

Make no mistake: This situation is completely preventable. Yet instead of protecting our citizens from this deadly substance here in the United States, we are actually importing more of it. According to the U.S. International Trade Commission, 114 metric tons of raw chrysotile asbestos was imported into the United States over the first 3 months of this year. That exceeds the 100 metric ton total that was brought in throughout all 12 months of 2021.

That raw asbestos is coming into ports like New Orleans and Houston, where the majority of the population is Black or Hispanic, and are at significant risk to exposure as it moves from port to processing. On top of that, a considerable amount of waste generated from the processing of raw material is either managed on site at the manufacturing plant or at a disposal facility, which are more often than not found near low income and minority communities.

I believe it is far past time that we follow the lead of the rest of the developed world and protect our citizens from this deadly toxic substance. Right now, the EPA is considering a rule banning the use, manufacture, and importation of one type of asbestos fiber here in the United States. This would be the first time since 1989 the Federal Government has worked to restrict this toxic chemical.

But restricting one fiber is not enough. We need to ban all the forms of asbestos. And that is precisely what the Alan Reinstein Ban Asbestos Now Act of 2022 will do. I want to make it clear that I really appreciate that we are having this hearing to expand the conversation among my colleagues who may have insights and ideas that may contribute to the work on this bill as we go forward. I am certainly interested in working with everyone who wants to help improve the health of Americans and protect them from this deadly carcinogen.

The threat posed by asbestos affects all Americans the same. It doesn't matter what party they belong to, and the solution should likewise protect all Americans.

I am pleased to welcome our four witnesses. But before they are introduced, let me turn to Ranking Member Wicker for his opening remarks.

**OPENING STATEMENT OF HON. ROGER WICKER,  
U.S. SENATOR FROM THE STATE OF MISSISSIPPI**

Senator WICKER. Thank you very much, Chairman Merkley. I am glad to be here and welcome the witnesses today.

Certainly around the Nation and especially in the State of Mississippi, we have been faced with mesothelioma and asbestosis among industrial workers. It is a major problem and a real health care concern.

The questions today should center around, is the legislation the way to proceed, or should we continue to rely on the scientists at the Environmental Protection Agency and OSHA to have the flexibility to handle asbestos. And with regard to providing safe drinking water, is asbestos harmful to the public when it is used in asbestos diaphragms to produce the chlorine that makes safe drinking water available? Those I think are the questions we are all wanting to get to the same place.

Asbestos is a mineral fiber that was used for decades. It was discovered that inhaling asbestos can cause negative health effects, including lung disease. So as I said, the EPA has taken several actions to limit the material's use and even proposed two new asbestos related regulations just this year. So thank you, Chairman Merkley, for your work on this. I think it is well intended.

We should consider the impact this bill would have on water treatment capacity for Americans. This bill would require chlor-alkali facilities to stop using asbestos within 2 years. Approximately one-third of chlor-alkali manufacturing plants in America use chrysotile asbestos to produce chlorine. The question is, is that dangerous, or can we separate that out and continue the benefits that we are getting from that. I am told there are nine domestic chlor-alkali facilities that use asbestos diaphragms to produce chlorine. According to the American Water Works Association, approximately 98 percent of public drinking water facilities use some form of chlorine based disinfectant.

During this time of runaway inflation and supply chain challenges, any effort that would limit the supply of chlorine would be harmful for water utilities and their ratepayers who would ultimately absorb huge price increases. In communities in Mississippi and other States, this would threaten public health and the ability of low income and disadvantaged communities to continue accessing safe drinking water. We should keep this in mind when considering proposals such as this.

Second, we should examine the impacts this legislation would have on chlorine used in other industries. Chlorine is essential for the production of pharmaceuticals, medical devices. It is also a critical component of certain crop protection tools which ensure that we have an abundant food supply here in the United States. Additionally, chlorine is utilized in the production of solar panels, wind turbines, and plastic foam insulation, although these are just a few uses of chlorine. It is clear that any impacts on chlor-alkali production would be far reaching, and we need to look into that.

It is important to note that the use of asbestos to produce chlorine is heavily regulated by the Occupational Safety and Health Administration. Chlor-alkali facilities that use asbestos are required to have engineering controls in place, and any individuals that come into contact with asbestos must use personal protective equipment and receive appropriate training.

Further, OSHA requires companies to monitor the health of their employees who have been exposed to asbestos. With these regulations and standards in place, there have not been any OSHA violations in the chlor-alkali industry since 1972.

Finally, we should keep in mind that EPA already has the authority to regulate the use of asbestos under the Toxic Substances

Control Act. In fact, EPA issued a pair of proposed regulations in April that seek to address some of the continued uses of asbestos in the United States.

Although I have concerns about EPA's proposed 2 year phase out, Congress should refrain from adding even more reporting requirements and phase down schedules that do not consider the adverse effect on American consumers and the agencies' ongoing efforts.

These are just some considerations that I think we should keep in mind, Mr. Chairman. Thank you so much.

Senator MERKLEY. Thank you very much, Senator.

Now I would like to introduce our first witness, Ms. Linda Reinstein. Linda became a public health advocate after her husband, Alan, was diagnosed with mesothelioma in 2003. She now serves as the President and Chief Executive Officer of the Asbestos Disease Awareness Organization, ADAO.

Ms. Reinstein, thank you for joining us today.

**STATEMENT OF LINDA REINSTEIN, PRESIDENT/CEO AND CO-FOUNDER, ASBESTOS DISEASE AWARENESS ORGANIZATION**

Ms. REINSTEIN. Good morning. It is an honor to testify today in support of S. 4244, the Alan Reinstein Ban Asbestos Now Act of 2022, ARBAN, introduced by you, Senator Merkley. And I want to thank all the members and their hardworking staff for making this important hearing possible.

To be clear, I am neither a lobbyist nor an attorney. I am a mesothelioma widow and a co-founder of the Asbestos Disease Awareness Organization, ADAO. We are an independent non-profit, dedicated to preventing asbestos exposure to eliminate all asbestos caused diseases.

Today I represent not only ADAO, but over 1 million Americans whose voices have been silenced prematurely by asbestos since 1991, when the EPA's asbestos ban was overturned in the courts. With your help, we can take an overdue step forward.

Exposure to asbestos, including chrysotile, causes cancer of the lungs, larynx, ovaries, mesothelioma, asthma, asbestosis, and other pleural diseases. The current ARBAN bill builds on the bipartisan legislation, H.R. 1603, which was approved by the House Energy and Commerce Committee by a 47 to 1 vote in 2019. This bill, S. 4244, would ban commercial asbestos imports and use of all deadly asbestos fibers, the Libby Amphibole asbestos, establishes a right to know where imports and use occur, and create an educational outreach program.

There are three irrefutable facts that provide a compelling case for this comprehensive legislation. All forms of asbestos, including chrysotile, are a human carcinogen. There is no safe level of asbestos exposure, and no, there is no controlled use. EPA's proposed risk management rule for asbestos, while a landmark step, is not a complete asbestos ban as it only prohibits chrysotile asbestos and six conditions of use.

Since the EPA tried to ban asbestos in 1989, we have implemented over 400,000 metric tons of raw asbestos. Currently imports come from Brazil, Russia, and China. As seen in this chart with the blue bars on the far right, the chlor-alkali producers have

emerged as the only importer of raw asbestos as the construction, automotive, and other industries have embraced alternatives.

Presently, there are only three companies, Olin, Occidental Chemical, and Westlake Chemical Corporation, using asbestos diaphragms, at a mere eight plants. In this chart, you can see the dramatic reduction of asbestos diaphragm as the industries transition to membrane technology. In fact, globally 83 percent of the plants producing chlor-alkali use the membrane technology.

You are going to hear from the industry that transitioning to non-asbestos technology could place the safety of drinking water at risk. This is an exaggeration and a distraction. According to the excellent EPA economic analysis, drinking water treatment is a minor use of chlorine. In this slide, you can see that larger quantities of chlor-alkali output are used in profitable manufacturing of PVC, vinyl, plastics, and other end uses. Olin and Occidental have in the last year announced the reduction and/or closures of asbestos diaphragm units, decreasing the production of over 800 tons of chlor-alkali chemicals, citing economic considerations. We strongly encourage bipartisan dialogue to develop a phase out schedule that is expeditious, one that protects public health, and meets the practical needs of all stakeholders.

Americans need and deserve legislation that bans asbestos to protect public health. With ARBAN, we can avoid time consuming, unproductive litigation and finally end our reliance on this deadly chemical.

On a personal note, I am honored that this lifesaving legislation is named after my late husband. My daughter, Emily, was just 10 when Alan was diagnosed with mesothelioma. He opted for a radical procedure to remove his left rib, resect his left lung, strip off his pericardium and surgically replace his diaphragm in hopes for more time with us. Alan fought a hard 3 year battle.

But mesothelioma patients rarely win. Alan died 3 short years later with Emily and me by his side.

This bill represents the hundreds of thousands of Alans who have lost their lives to preventable diseases. We urge you to pass ARBAN and start protecting public health and saving lives right away. So many organizations have stepped up on the early announcement of your bill like APHA, PERC, NRDC, CEH, and so many others.

I want to thank you for your time today. I look forward to answering your questions. My 19 page written testimony is online and has details and citations.

Thank you.

[The prepared statement of Ms. Reinstein follows:]

**Testimony of Linda Reinstein  
President and Cofounder  
Asbestos Disease Awareness Organization**

**Before the Senate Committee on Environment and Public Works  
Subcommittee on Chemical Safety, Waste Management, Environmental Justice, and  
Regulatory Oversight**

*Legislative Hearing on S. 4244 — Alan Reinstein Ban Asbestos Now Act of 2022  
June 9, 2022*

Thank you, Chairman Merkley, Ranking Member Wicker and Members of the Committee for giving me the honor and opportunity to testify in support of S. 4244, the Alan Reinstein Ban Asbestos Now Act of 2022 (ARBAN).

We are grateful to the Subcommittee on Chemical Safety, Waste Management, Environmental Justice, and Regulatory Oversight of the Senate Environment and Public Health Committee for holding this important hearing on long-overdue legislation to ban asbestos, a lethal substance that has been prohibited by nearly 70 countries, but remains legal in the US.

Today, I not only represent the Asbestos Disease Awareness Organization (ADAO), but also your many constituents who suffer from or have been silenced by asbestos. I am neither a lobbyist nor an attorney. I am a mesothelioma widow and co-founder of ADAO, an independent nonprofit, dedicated to preventing exposure to asbestos and eliminating the deadly diseases it causes. Our work is critical for many sufferers from asbestos-related diseases and family members of loved ones who died from asbestos exposure. Alarming, our research from the Institute for Health Metrics and Evaluation reveals that from 1991 to 2021, more than one million Americans died from preventable asbestos-caused diseases.<sup>1</sup> Asbestos-related deaths have not been limited to some regions, but have occurred in all states. These deaths represent only a snapshot in time; the total number of deaths during the 100+ years of asbestos use is much larger. Unfortunately, the death toll from asbestos exposure still remains high: research shows that asbestos claims over 40,000 American lives each year.

Launched in 2004, ADAO is now the largest independent non-profit organization in the U.S. dedicated to eliminating asbestos-caused diseases. ADAO is far more than an asbestos victims' organization; our cutting-edge research, ongoing product testing, and educational efforts have enabled us to be a leading stakeholder in prevention and policy.

ADAO's [Science and Prevention Advisory Boards](#) are comprised of world class researchers, physicians, former government officials and experts in asbestos exposure. Their advice ensures that our educational resources and advocacy materials reflect the best available science and are credible

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<sup>1</sup><https://www.asbestosdiseaseawareness.org/newsroom/blogs/adao-asbestos-mortality-report-from-1999-2019-the-dark-truth-about-asbestos-over-one-million-americans-have-died-from-preventable-asbestos-caused-diseases-in-just-20-years-1999-2019/>

and up to date. Members of our Boards have worked tirelessly for nearly two decades to ban asbestos and, along with other leading scientists, have sent a letter to the Committee expressing strong support for S. 4244.

S. 4244 has broad and diverse stakeholder support, including from [Asbestos Disease Awareness Organization](#) (ADAO), [American Public Health Association](#) (APHA), [International Association of Firefighters](#) (IAFF), [Environmental Protection Network](#) (EPN), [Safer Chemicals, Healthy Families](#) (SCHF), [United States Public Interest Research Group](#) (PIRG), [Center for Environmental Health](#) (CEH), [Environmental Working Group](#) (EWG), [Natural Resources Defense Council](#) (NRDC), [Collegium Ramazzini](#), [Environmental Information Association](#) (EIA), [Hazards Campaign](#) (UK), [Less Cancer](#), and [Brazilian Association of People Exposed to Asbestos](#) (ABREA). Numerous leading asbestos scientists and physicians also support ARBAN.

Through ADAO, I have dedicated my life to preventing asbestos exposure in order to eliminate all asbestos-caused diseases. These past eighteen years have taught me that shaping public policy is a glacially slow process. However, today's hearing marks a landmark step forward for public health and a critical milestone in banning asbestos.

There are three irrefutable facts that provide a compelling case for this legislation:

- All forms of asbestos, including chrysotile, are carcinogenic to humans.
- There is no safe level of asbestos exposure and no controlled use that eliminates risk.
- EPA's proposed Part 1 chrysotile asbestos risk management rule, while a landmark step, is not a complete asbestos ban as it only bans one asbestos fiber and six conditions of use.

Because of these facts, only comprehensive legislation that rapidly eliminates all asbestos from US commerce will fully protect public health.

S. 4244 will take the following critical steps:

- **Prohibit all importation and use of all six commercial asbestos fibers** (chrysotile, crocidolite (riebeckite), amosite (cummingtonite-grunerite), anthophyllite, tremolite, and actinolite) as well as winchite and richterite, which comprise the hazardous Libby Amphibole asbestos.
- **Transition the eight remaining plants in the chlor-alkali industry** using asbestos diaphragms in the production of chlorine and caustic soda to non-asbestos technology within two years.
- **Establish mandatory “right to know” reporting** obligations for companies importing and using commercial asbestos and asbestos-containing mixtures and articles so the public is fully informed of where and in what quantities asbestos is present in our communities and how it is used.
- **Develop an educational outreach program** to support full compliance with ARBAN.

ADAO believes that S. 4244 is carefully crafted legislation that fully achieves the goal of banning asbestos without overreaching, and accommodates the interests of diverse stakeholders. We hope the Subcommittee and Committee will continue the consensus-building process that Senator Merkley has begun and that ARBAN can advance in the Senate and House with bi-partisan support.

**OUTLINE OF TESTIMONY**

In the body of my testimony, I will make the following key points:

- Asbestos has taken and still takes an enormous toll on the health and lives of Americans and places heavy burdens on our health care system.
- Asbestos and asbestos-containing products continue to be imported and used in the US 33 years after the Environmental Protection Agency (EPA) unsuccessfully tried to ban asbestos under the Toxic Substances Control Act (TSCA) in 1989.
- While the US has failed to take action, asbestos bans have been adopted by nearly 70 other countries.
- Under the Biden Administration, EPA has made overdue progress in addressing asbestos using the tools in the 2016 TSCA amendments, but the weak foundation laid by the Trump EPA has limited the scope and effectiveness of these efforts.
- As a result, EPA's TSCA risk management rules will fail to ban all commercial asbestos fibers and all uses of these fibers.
- Industry opposition and litigation may well derail and delay EPA's rule, allowing asbestos exposure and risk to continue into the future.
- Congress can overcome these limitations by enacting a permanent, comprehensive and fully protective asbestos ban of all six fibers that is not subject to judicial review.
- Most of the chlor-alkali industry – the sole remaining US importer of raw asbestos – has already transitioned to non-asbestos technology and only eight out of 42 plants in the industry continue to use asbestos.
- The asbestos diaphragm process is obsolete and inefficient technology and the more cost-effective membrane cell process now accounts for 83 percent of global production of chlorine and caustic soda.
- According to EPA's economic analysis, elimination of all remaining asbestos use in the industry is not only feasible but will have economic and environmental benefits while protecting workers and other exposed populations from asbestos-related harm.
- If they believe the two-year phaseout in EPA's proposed rule and S. 4244 is not feasible, the three users of asbestos diaphragms, Occidental Chemical Corporation, Olin Corporation, and Westlake Chemical Corporation, should propose a reasonable timeline for transitioning to non-asbestos technology and work with the Subcommittee and stakeholders to craft a phase-out process that is expeditious but implementable.
- Based on the input of stakeholders, the definition of asbestos in ARBAN only applies to commercially mined and used asbestos, not asbestos contaminants in other mineral formations, and would not impact the US mining industry, which no longer extracts raw asbestos for sale and distribution in commerce.
- The asbestos definition in S. 4242 properly includes richerite and winchite fibers, which are found in the hazardous Libby Amphibole asbestos and should no longer be mined or used in the US.
- As an amendment to TSCA, ARBAN's scope is limited to TSCA-regulated chemical substances and does cover personal care products or cosmetics within the jurisdiction of the Food and Drug Administration. The bill's definition of commercial asbestos will therefore have no application beyond TSCA.
- The reporting provisions in S. 4244 will backstop and support effective implementation of the asbestos ban.



### **The Impact of Asbestos Exposure on Public Health Has Been Devastating and It Continues to Kill Americans in Large Numbers**

For over a century, asbestos has been known to cause widespread disease and death, yet imports and use continue in the US.

The International Agency for Research on Cancer (IARC)<sup>2</sup>, the Occupational Safety and Health Administration (OSHA)<sup>3</sup>, the Department of Health and Human Services,<sup>4</sup> the National Institute for Occupational Safety and Health (NIOSH)<sup>5</sup>, the World Health Organization (WHO)<sup>6</sup> and a number of other regulatory and public health bodies classified asbestos as a human carcinogen decades ago.

In a monograph on asbestos published in 2012, IARC found the following cancers in humans to be causally related to asbestos exposure: lung cancer, malignant mesothelioma, ovarian cancer, and cancer of the larynx.<sup>7</sup> There is considerable evidence in the scientific literature of causal associations with gastrointestinal cancers and kidney cancer. Non-malignant diseases are also caused by asbestos. These include asbestosis and asbestos-related pleural thickening. All fiber types in commercial use have been linked causally with each of these diseases and are regulated accordingly by OSHA and other government agencies.

Just two weeks ago, the International Labor Organization, a unit of the United Nations, described the global impacts of continuing asbestos use as follows:

“Asbestos, in all of its forms, including chrysotile, is a proven human carcinogen. More than 125 million workers continue to be exposed to asbestos in their working environments. While the most recent estimates indicate that exposure to asbestos causes 210,000 deaths each year, this figure is likely to be underestimated. Occupational exposure to asbestos is the 2nd deadliest occupational risk factor among chemical exposures, and the 4th deadliest occupational risk factor overall.”<sup>8</sup>

The economic cost of inaction has been and remains immense. According to the [WHO report](#) “Asbestos Economic Assessment of Bans and Declining Production and Consumption,” the “substantial costs associated with the continued use of asbestos potentially outweigh any other economic benefit. The annual global health care costs associated with the health effects of asbestos are estimated to be US \$ 2.4–3.9 billion, excluding the additional costs of pain, suffering and welfare losses.”

There is overwhelming consensus in the scientific community that there is no safe level of exposure to asbestos. As noted by WHO:

<sup>2</sup> <http://monographs.iarc.fr/ENG/Monographs/vol100C/mono100C.pdf>

<sup>3</sup> <https://www.osha.gov/laws-regs/federalregister/1994-08-10>

<sup>4</sup> <https://ntp.niehs.nih.gov/ntp/roc/content/profiles/asbestos.pdf>

<sup>5</sup> <https://www.cdc.gov/niosh/docs/2011-159/pdfs/2011-159.pdf>

<sup>6</sup> <https://monographs.iarc.fr/wp-content/uploads/2018/06/mono100C-11.pdf>

<sup>7</sup> [https://www.who.int/ipcs/assessment/public\\_health/Elimination\\_asbestos-related\\_diseases\\_EN.pdf](https://www.who.int/ipcs/assessment/public_health/Elimination_asbestos-related_diseases_EN.pdf)

<sup>8</sup> <https://www.asbestosdiseaseawareness.org/wp-content/uploads/2022/06/UN-ILO-asbestos-responses-2022.pdf>

Bearing in mind that there is no evidence for a threshold for the carcinogenic effect of asbestos, including chrysotile, and that increased cancer risks have been observed in populations exposed to very low levels, the most efficient way to eliminate asbestos-related diseases is to stop using all types of asbestos.<sup>9</sup>

Just two weeks ago, WHO “reiterate[d] its policy, which remains unchanged, that the most efficient way to eliminate asbestos-related diseases is to stop the use of all types of asbestos.”

Despite the elimination of many asbestos products due to liability concerns, the US death toll from asbestos exposure remains alarmingly high. At the 14th Annual Asbestos Disease Awareness Conference in Washington D.C. in 2018, Dr. Jukka Takala DSc, MSc, BSc, President of the International Commission of Occupational Health (ICOH) and colleagues, reported a shocking increase in previous estimates of asbestos-related deaths, underscoring the escalating and critical need for action by government. According to the study entitled “*Global Asbestos Disaster*”, asbestos-related diseases cause 39,275 deaths in the United States annually—more than double the previous estimates of 15,000 per year.<sup>10</sup>

Asbestos fibers can become respirable when asbestos-containing materials and products are disturbed or become friable. The primary route of asbestos entry into the body is inhalation; however, fibers can also be ingested.<sup>11</sup> OSHA has three standards to protect workers from the hazards of asbestos in the workplace: General Industry, Shipyards, and Construction. However, OSHA has recognized that these standards do not eliminate significant risks to workers. Thus, the OSHA standards cannot take the place of a ban.<sup>12</sup>

A 2013 study by NIOSH of firefighters in three cities added further evidence of the causal link between asbestos and malignant mesothelioma. The researchers wrote: [t]he population of firefighters in the study had a rate of mesothelioma two times greater than the rate in the U.S. population as a whole” and that “it was likely that the[se] findings were associated with exposure to asbestos, a known cause of mesothelioma.”<sup>13</sup>

[According to the National Institute of Health](#), work-related asbestos exposure is responsible for the vast majority of US asbestos-caused deaths. No substance in history has posed a greater threat to the health of workers. The danger extends beyond manufacturing plants—[firefighters](#) and [school teachers](#) are among the workers at highest risk for asbestos exposure and related diseases. Asbestos fibers can be carried home on workers’ clothing, skin, and hair, thus subjecting their family members to non-occupational asbestos exposure.

<sup>9</sup> [https://www.who.int/ipcs/assessment/public\\_health/chrysotile\\_asbestos\\_summary.pdf](https://www.who.int/ipcs/assessment/public_health/chrysotile_asbestos_summary.pdf)

<sup>10</sup> <http://monographs.iarc.fr/ENG/Monographs/vol100C/mono100C.pdf>

<sup>11</sup> <https://www.atsdr.cdc.gov/csem/csem.asp?csem=29&po=6>

<sup>12</sup> <https://www.osha.gov/Publications/OSHA3507.pdf>

<sup>13</sup> <https://www.cdc.gov/niosh/updates/upd-10-17-13.html>

### **Asbestos Use and the Magnitude of Human Exposure in the US Have Been Massive In Scope**

For over 100 years, the use of asbestos and exposure of Americans to this lethal substance have been massive in scale. According to the U.S. Geological Survey (USGS):<sup>14</sup>

- From 1900 to today, the U.S. has consumed more than 31 million metric tons of asbestos;
- From 1900 to 2002, the U.S. mined 3,308,594 metric tons of asbestos until the last domestic mine closed in 2002;
- From 1900 to 2021, 29,147,399 metric tons of asbestos were imported.

In the late 1980s, EPA was on a path to impose comprehensive restrictions on asbestos. The Agency issued a rule in 1989 under section 6(a) of TSCA prohibiting the manufacture, importation, processing or distribution in commerce of asbestos in almost all products based on a determination that asbestos presented an “unreasonable risk of injury” under TSCA section 6.<sup>15</sup> However, despite the comprehensive risk analysis supporting the rule, the Fifth Circuit Court of Appeals overturned the ban in 1991, following an industry challenge, for reasons unrelated to the dangers of asbestos.<sup>16</sup>

As a result, while nearly 70 countries, including Canada, Japan and the European Union, have banned asbestos, the U.S. has yet to prohibit asbestos importation and most forms of use.<sup>17</sup> The consequence has been that asbestos importation and use have been largely unrestricted in the U.S. for the last 33 years.

### **The Sole Remaining Importer and User of Raw Asbestos in the US Is the Chlor-alkali Industry**

USGS data shows that the US manufacturing industries that historically relied on raw asbestos reduced imports starting in the 1990s. In the last 10 years, the chlor-alkali producers emerged as the largest domestic user of raw asbestos and now the industry is the only raw asbestos importer and user. According to USGS, “The chloralkali industry, which uses chrysotile to manufacture nonreactive semipermeable diaphragms that prevent chlorine generated at the anode of an electrolytic cell from reacting with sodium hydroxide generated at the cathode, has accounted for 100% of asbestos fiber consumption since at least 2015.”<sup>18</sup>

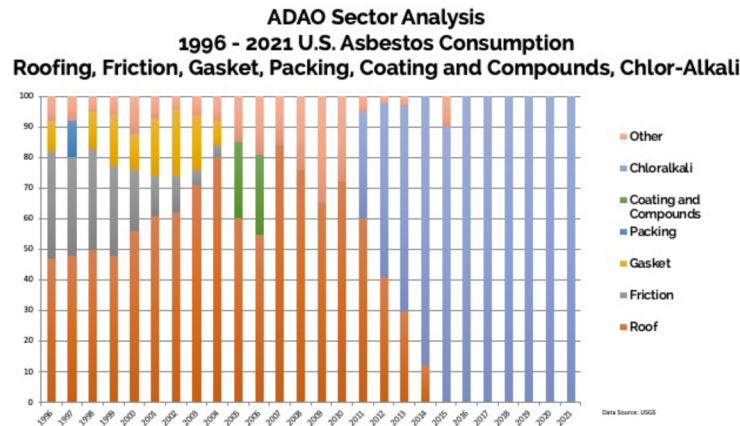
<sup>14</sup> <https://www.usgs.gov/centers/national-minerals-information-center/historical-statistics-mineral-and-material-commodities>.

<sup>15</sup> <https://www.epa.gov/asbestos/asbestos-ban-and-phase-out-federal-register-notices>

<sup>16</sup> <https://law.justia.com/cases/federal/appellate-courts/F2/947/1201/153685/>

<sup>17</sup> [http://www.ibasecretariat.org/alpha\\_ban\\_list.php](http://www.ibasecretariat.org/alpha_ban_list.php)

<sup>18</sup> <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-asbestos.pdf>



The [economic analysis](#) for EPA's Part 1 chrysotile asbestos rule indicates that bulk asbestos imports by the chlor-alkali industry "tend to range between 100 and 800 metric tons during a given year." According to the [United States International Trade Commission](#), imports by the industry were 750 metric tons in 2018, 172 metric tons in 2019, 305 metric tons in 2020 and 100 metric tons in 2021. Countries mining asbestos and now supplying it to the US industry include Brazil, Russia and China.

Data obtained by [ADAO from the United States International Trade Commission \(ITC\)](#) confirms that the U.S. chlor-alkali industry imported 114 metric tons of raw chrysotile asbestos in the first three months of 2022 alone. This is more asbestos than the 100 metric tons that the industry imported during the *entire year of 2021*. The 2022 raw asbestos imports were from Brazil and China and entered the US at five ports: Houston-Galveston, TX; New Orleans, LA; Los Angeles, CA and Norfolk, VA.

The recent uptick in imports indicates that the industry is likely stockpiling asbestos for future use.

**Asbestos-Containing Products Identified and Banned in the Part 1 Risk Evaluation and Proposed Rule Do Not Include All Ongoing and Future Asbestos Conditions of Use**

Chlor-alkali production is not the only source of ongoing asbestos exposure in the US. The EPA Part 1 risk evaluation identifies five uses of imported asbestos-containing articles that present unreasonable risks to workers and consumers:

- Processing and Industrial Use of Chrysotile Asbestos-Containing Sheet Gaskets in Chemical Production
- Industrial Use and Disposal of Chrysotile Asbestos-Containing Brake Blocks in Oil Industry

- Commercial Use, Consumer Use and Disposal of Aftermarket Automotive Chrysotile Asbestos-Containing Brakes/Linings
- Commercial Use and Disposal of Other Chrysotile Asbestos-Containing Vehicle Friction Products
- Commercial Use, Consumer Use and Disposal of Other Chrysotile Asbestos-Containing Gaskets

These conditions of use would be eliminated under EPA's Part 1 rule and S. 4244. As EPA has found in its proposed rule, all have cost-effective asbestos-free alternatives, many of which are produced in the U.S. and can therefore be phased out without additional costs, disruption to U.S. users or harm to the US economy.

However, ADAO and its experts have consistently emphasized that the six conditions of use addressed in Part 1 do not comprise the full universe of currently imported chrysotile-containing products. The EPA Science Advisory Committee on Chemicals (SACC) expressed the same concerns in its [review](#) of the draft risk evaluation. For example, EPA reports and other information provide evidence of current importation of knitted fabrics (woven products), asbestos cement products, compressed asbestos fiber jointing paper, millboard and felt, building materials and yarn and thread.<sup>19</sup>

In his 2020 [decision](#) directing EPA to require asbestos reporting by industry, Federal District Court Judge Edward Chen said that EPA has “little information . . . about the quantities of asbestos-containing products in the U.S. chain of commerce and the overall consumer and occupational exposure for downstream uses of asbestos.” He emphasized that the Agency's failure to use its TSCA reporting authority to obtain this information “runs contrary to EPA's obligation to collect reasonably available information to inform and facilitate its regulatory obligations under TSCA.”

Because the Trump EPA failed to require reporting on asbestos use and importation, the Part 1 risk evaluation provides an incomplete picture of the asbestos-containing products entering the US, the amounts of asbestos these products contain, how they are used, and the nature and extent of ongoing exposures and risks for which they are responsible. By contrast, S. 4244 does not have this limitation but would ban **all** products containing asbestos, including but not limited to those addressed in the Part 1 risk evaluation and proposed rule.

#### **EPA's Part 1 Proposed Risk Management Rule Does Not Ban All Asbestos Fibers and Uses and Cannot Substitute for Comprehensive Ban Legislation**

In December 2016, shortly after the passage of amended TSCA, EPA [selected](#) ten substances for initial risk evaluations and risk management rulemakings under the new law. Asbestos was among these substances in recognition of its lethal properties and the importance of restarting risk reduction efforts after three decades of inaction. Unfortunately, the Trump Administration's initial implementation of the new TSCA authorities was disappointing and the Biden EPA inherited an incomplete and weak Part 1 asbestos risk evaluation.

We applaud the current EPA leadership for making asbestos a top priority and expeditiously proposing a [Part 1 risk management rule](#) based on the findings of the Trump evaluation. However,

<sup>19</sup><https://www.asbestosdiseaseawareness.org/wp-content/uploads/2022/06/2017-EPA-Use-and-Market-Profile-for-Asbestos.pdf>

the proposal would not result in a full asbestos ban and is not a substitute for the comprehensive ban that S. 4244 would enact.

The Trump EPA made an unfortunate decision to only address chrysotile asbestos in its Part 1 risk evaluation. The narrow scope of the draft evaluation was heavily criticized by EPA's SACC as well as by ADAO and many scientists, but the Agency chose to finalize it without including the other five fibers. The Biden EPA was forced to accept this decision or else delay asbestos risk management for several years. As a result, EPA's proposed Part 1 rule was necessarily limited to chrysotile asbestos and omits the five other asbestos fiber types: crocidolite, amosite, anthophyllite, tremolite, and actinolite.

Leading health authorities have consistently recognized that these fibers, as well as chrysotile, can cause "cancer of the lung, larynx, and ovaries, and also mesothelioma (a cancer of the pleural and peritoneal linings). Asbestos exposure is also responsible for other diseases such as asbestosis (fibrosis of the lungs), and plaques, thickening and effusion in the pleura."<sup>20</sup>

EPA recently [initiated](#) development of a Part 2 risk evaluation and risk management rulemaking for asbestos. However, Part 2 will not result in a ban on the other five asbestos fibers. The main focus of Part 2 will be the risks of "legacy asbestos" – i.e. discontinued building materials and other asbestos-containing products that remain in place. Although these materials and products contain all six of the recognized asbestos fibers, legacy asbestos embedded in buildings and articles cannot be readily removed. Part 2 risk management will therefore not result in a comprehensive ban on commercial use of the six fibers. Without legislation prohibiting their importation and use, there will be no effective protection against exposure to these fibers and the public will be at risk of harm.

Consistent with the Part 1 risk evaluation, the proposed Part 1 rule only addresses six chrysotile asbestos conditions of use: asbestos diaphragms, sheet gaskets, brake blocks, aftermarket automotive brakes/linings, other vehicle friction products, and other gaskets. As noted above, because of the Trump EPA's flawed and incomplete information collection efforts, the rule will fail to restrict other chrysotile-containing asbestos products now entering the US or imported in the future, allowing harmful asbestos exposure to continue.

Asbestos ban legislation would close these gaps in risk management. S. 4244 would apply to the six recognized asbestos fiber types and their uses without exceptions or limitations. This would permanently close the door to **all** importation and use of raw asbestos and asbestos-containing products – not just for chrysotile but for all six asbestos fibers and not just for the six conditions of use addressed in the Part 1 proposal but for all current and future conditions of use. In the absence of legislation, Americans will have no assurance that ongoing exposure to commercial asbestos has been eliminated.

Based on [meeting materials and press statements](#), ADAO is concerned that industry opposition and litigation will delay the Part 1 rule for years, during which importation and use of asbestos will continue and the public will remain at risk. Congress can prevent this unfortunate outcome by enacting a comprehensive and permanent asbestos ban that cannot be challenged in the courts.

#### **Continued Use of Asbestos in the Chlor-alkali Industry Poses Significant Risks to Public Health**

<sup>20</sup> <https://www.who.int/news-room/fact-sheets/detail/asbestos-elimination-of-asbestos-related-diseases>



A centerpiece of S. 4244 and EPA's Part 1 proposal is a deadline of two years for elimination of the dangerous use of chrysotile asbestos by three companies in the chlor-alkali industry who have failed to adopt non-asbestos technology. In its [January meeting](#) with the Biden administration, [one of these companies – Olin](#) – requested a “[permanent exemption](#)” from any restriction on asbestos imports and use, arguing that use of asbestos in its plants presents “proven zero public health risk” This claim is indefensible.

Far from determining that asbestos diaphragms present “proven zero risk,” EPA's 2021 [Part 1 risk evaluation](#) concludes that workers in chlor-alkali plants face significant and unreasonable risks of lung cancer and mesothelioma. Moreover, EPA's risk determinations do **not** take into account additional risks to workers and the general population that arise at several other points in the asbestos life-cycle downstream and upstream from chlor-alkali plants themselves.

Because asbestos mining has been phased out in North America, the chlor-alkali industry now sources asbestos from mines in Brazil, China and Russia that lack rigorous worker protections. Extraction and processing of raw asbestos at these mines has put hundreds of unprotected workers at risk of mesothelioma, lung cancer and other serious diseases. Transport of raw asbestos from mines to ports and loading of asbestos onto ships for export results in additional worker exposure and risk. The harm that workers in asbestos-producing countries suffer is directly attributable to demand for asbestos created by US chlor-alkali producers.

Once imported asbestos arrives in the US, further exposure is likely when the asbestos is unloaded at ports of entry, transferred to trains or trucks, transported to chlor-alkali plants and unloaded for use. Removal and replacement of diaphragms and on- and off-site disposal of the resulting asbestos waste also represent significant pathways of exposure. In contrast to chlor-alkali plants, the workforce handling asbestos during these activities is often transient and poorly trained and occupational health protections may be weak or non-existent.

Moreover, all workers during asbestos use, handling, shipping and disposal operations may also be exposed to “legacy” asbestos that is pervasive in buildings and discontinued products throughout the US, resulting in additional risks to them and their families.

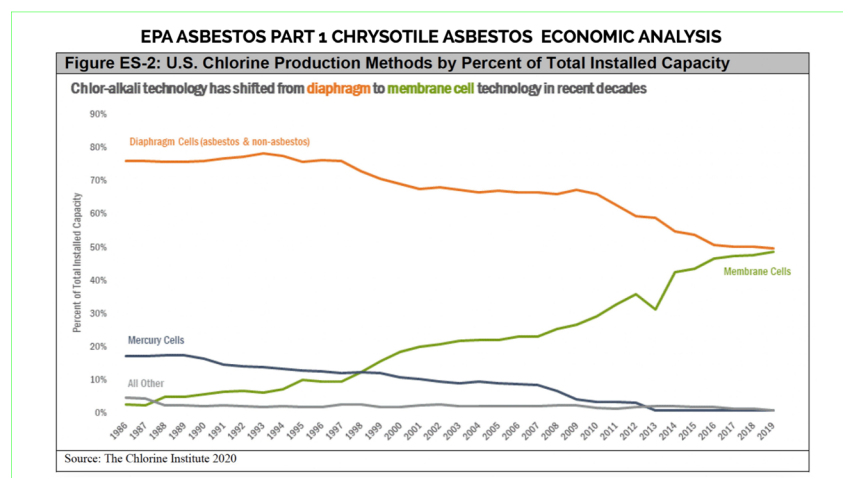
Asbestos waste—much of which is from the chlor-alkali industry—continues to be generated and managed in the U.S. in significant quantities. According to [reports](#) submitted for the Toxic Release Inventory (TRI), total friable asbestos releases during 2018-2020 were 59,578,684 pounds, the bulk of which were to land disposal facilities at production sites or landfills. Because of limitations in the scope of TRI reporting, the quantity of asbestos waste released to such disposal facilities is probably much larger.

Both chlor-alkali plants and disposal facilities managing asbestos wastes are located in disadvantaged areas with large minority populations and disproportionately high levels of industrial pollution. Exposure to asbestos wastes generated by the chlor-alkali industry is thus another significant health risk to workers and the public that is not accounted for in the EPA Part I risk evaluation. A ban on asbestos importation and use would reduce this risk by curtailing the generation, transport and management of asbestos wastes.

### The Chlor-alkali Industry Has Moved Away from the Dangerous and Outmoded Asbestos Diaphragm Process to Cost-effective and Proven Non-Asbestos Production Methods

The three remaining chlor-alkali producers using raw asbestos – Occidental Chemical Corporation, Olin Corporation, and Westlake Chemical Corporation – are outliers in the industry, which has broadly adopted proven non-asbestos technology in the decades since it became available.

A 2020 [Chlorine Institute](#) survey of the industry cited in the EPA Economic Analysis shows that there were 21 companies that produce chlorine at 42 plants.<sup>21</sup> As shown in the EPA Economic Analysis, U.S. chlorine production capacity using asbestos diaphragms has declined dramatically in the last two decades and membrane plants have replaced this lost capacity:



In the five years since TSCA was amended in 2016, the number of asbestos diaphragm plants has declined from 17 to eight. (Oxychem and Olin recently announced closures of plants in New York and Alabama, apparently for economic reasons unrelated to legislation or regulation).

The industry has previously reported that plants using the asbestos diaphragm process account for 33 percent of US production of caustic soda and chlorine while membrane cell and non-asbestos diaphragm technologies contribute the remaining 66 percent. However, the closure of over half of the asbestos-using plants over the last six years makes it likely that these plants now supply a much

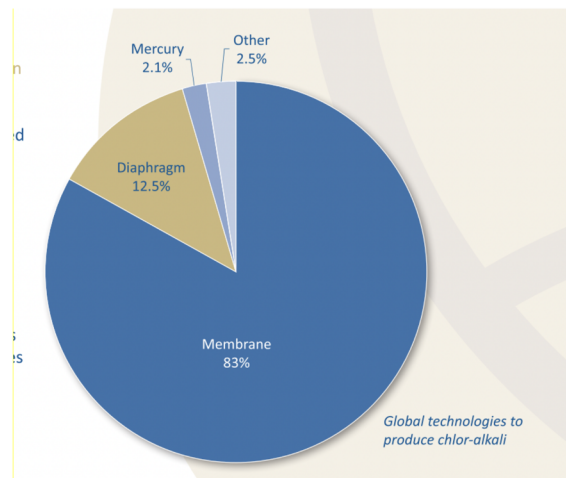
<sup>21</sup> The Chlorine Institute's 2020 survey reports a somewhat higher number of membrane cell plants than the [EPA Economic Analysis](#), even though EPA states that it is relying on the Institute's data. The reason for the difference is not clear and should be clarified by EPA.



smaller portion of total production and the share of membrane-using and asbestos-free diaphragm plants has substantially increased.

Outside the US, the membrane technology accounts for nearly all production of chlorine and caustic soda except in Russia and the Arab world. Only two plants in Western Europe and Canada still use asbestos diaphragms and these plants are mandated to eliminate asbestos by the end of the decade.

The [World Chlorine Council](#) recently estimated that 83 percent of global chloride production is based on the membrane process:



According to EPA, the last US asbestos-diaphragm plant was built in 1981 and one plant dates back to the late 1800s. None of the plants has increased use of asbestos diaphragms in approximately 17 years. In [announcing](#) recent decisions to close diaphragm production units accounting for 655 ECU tons of chlorine output, Olin's CEO stressed last May that these units were both capital-intensive and produced poor returns:

CLAYTON, Mo., May 18, 2021 — Olin Corporation (NYSE: OLN) announced today that it plans to permanently shut down approximately 20% of its diaphragm-grade chlor alkali capacity (approximately 225,000 ECU tons) at its Plaquemine, LA facility. The closure is expected to be completed by June 1, 2021 and is expected to be cash flow accretive. "This is the next step on our path to exit high-capital, low-return diaphragm ECUs and redirect Olin's cash generation model toward our transformative Parlaying and Structuring phases," remarked Scott Sutton, Olin Chairman, President, and Chief Executive Officer. "Earlier this year we shut down 200,000 diaphragm ECU tons at our McIntosh, AL facility, and the previously announced shut down of 230,000 diaphragm ECU tons at our Freeport, TX facility will occur in the second quarter of 2021, as well."

Significantly, all of these shutdowns were driven by economics, not regulation or legislation.<sup>22</sup> The industry's decision to shutdown asbestos plants and reduce chlorine supply for purely economic reasons makes it hard to accept their claims that an asbestos ban will create chlorine shortages.

### **The Exemption of Chlor-Alkali Plants from the 1989 Ban Is Not Relevant Now**

The industry claims that, because chlor-alkali plants were exempted from EPA's 1989 asbestos ban, the use of asbestos diaphragms to produce chlorine and caustic soda should be deemed safe and allowed to continue. This claim is without merit and puts public health at risk.

In 1989, chlor-alkali production accounted for a small portion of total US asbestos use, a situation that has now reversed completely. Moreover, membrane cell technology was new and largely unproven at that time. According to the Chlorine Institute, only 2.4% of chlor-alkali production in 1987 came from membrane cells. Thus, EPA in its rule said that "[i]nsufficient information was available to determine whether suitable product substitutes will soon be available for use in existing chlorine production facilities" and "[t]he cost of modifying existing plants to accept new membrane cell technology in response to a ban on asbestos use in this product may be very high." 54 Federal Register 29501 (July 12, 1989).

These conditions have changed dramatically since 1989 with the widespread acceptance of membrane technology in the US and globally. In the 1989 rule, EPA "specifically recommend[ed] that users of asbestos diaphragms use non-asbestos diaphragm cells in facilities that will accept them and in the design of new facilities." The global chlor-alkali industry has generally followed this advice, except for the three companies that have stuck with outdated asbestos technology.

### **Conversion to Non-Asbestos Technologies Will Result in Cost Savings for the Industry and Net Economic Benefits Overall**

The massive shift away from the asbestos diaphragm process in recent decades was not accompanied by shortages of chlorine, supply disruptions, or other adverse economic impacts. It is simply not credible to assert that these consequences will occur if further conversion to non-asbestos processes is the result of an asbestos ban rather than market forces.

According to the EPA Economic Analysis, while conversion to the membrane process would incur capital costs, it would also increase energy efficiency and reduce operational costs and could enable production of higher-quality caustic soda that would boost revenues. Thus, EPA's analysis shows that, under some scenarios, conversion of plants to the membrane technology would actually result in annualized cost savings to the industry, meaning that it would produce *net economic benefits and pay for itself over time by improved energy efficiency, higher quality product and longer service life*. For this reason, EPA's Economic Analysis projects a "high probability" that asbestos diaphragm units would be retired or replaced even in the absence of a ban on these units, continuing the recent trend in the industry.

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<sup>22</sup> The announced closure of the OxyChem Niagara Falls asbestos diaphragm plant will reduce production by another 170 metric tons

**In Addition to Eliminating Harmful Asbestos Exposure and Reducing Energy Costs, Non-asbestos Technology Will Have Health and Environmental Benefits**

As EPA states in its Part 1 proposal, the ban on asbestos in the chlor-alkali industry “is expected to generate significant benefits from reduced air pollution associated with electricity generation.” This is because “membrane cells are more energy efficient than diaphragm cells [and] reduce . . . [emissions] of carbon dioxide, particulate matter, sulfur dioxide, and nitrogen oxides.” EPA estimates that “converting asbestos diaphragm cells to membrane cells could yield tens of millions of dollars per year in environmental and health benefits from reduced emissions.” These benefits include reducing global warming.

Another benefit of the membrane process is the elimination of the substantial asbestos wastes generated during use and disposal of asbestos diaphragms and their parts. As noted above, landfills currently receive asbestos waste from chlor-alkali plants and large volumes of waste from the asbestos diaphragm process are also stored on site. The substantial costs and health risks associated with managing these wastes would be avoided if asbestos is no longer used in chlor-alkali production. If monetized, these pollution reduction benefits would increase the net economic savings from an asbestos ban.

**Industry Claims of Massive Chlorine Shortages From An Asbestos Ban Are Irresponsible Fear-Mongering**

On April 5, the [American Chemistry Council](#) (ACC), representing chlorine producers, “expressed industry’s disapproval” of EPA’s Part 1 proposal and claimed that elimination of asbestos use in chlor-alkali production “would ban the manufacture of nearly one-third of chlorine and sodium hydroxide chemicals and have significant adverse effects on the supply of the nation’s drinking water.”

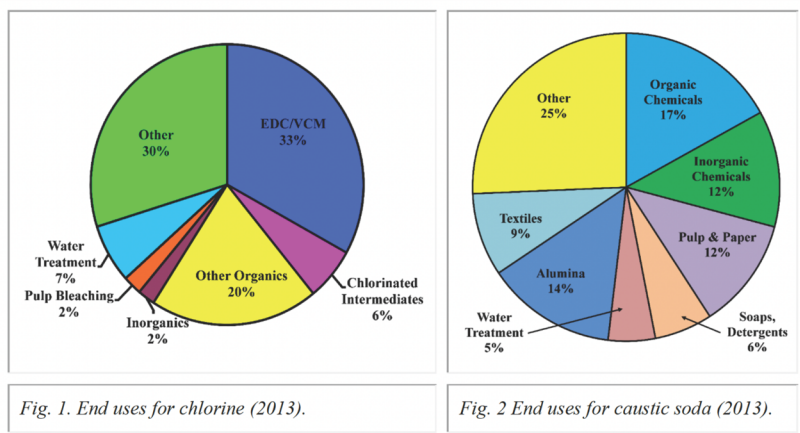
ACC and others are using scare tactics and misrepresentations to create a false narrative that an asbestos ban will dramatically reduce the supply of chlorine and caustic soda. The loss of one-third of the nation’s chlorine and sodium hydroxide production would only occur if the three remaining asbestos users in the industry close their diaphragm units and do not replace the lost capacity with alternate production technology. But this is a highly implausible scenario. Given the widespread current reliance by the industry on non-asbestos technologies, the sizable recent closures of asbestos diaphragm capacity voluntarily, and the fact that the three asbestos users have themselves invested in cell membrane plants, there’s no rational reason why the producers would not find other ways to meet chlorine demand. Indeed, economics would favor conversion to alternate technologies. As EPA has concluded, the membrane process has important efficiencies and cost savings that would drive the closure of asbestos diaphragm units even without a ban.

**A Ban With an Adequate Transition Period Would Assure a Sufficient Supply of Chlorine for Drinking Water Treatment**

According to the EPA Economic Analysis, drinking water treatment is a minor use of chlorine and caustic soda, accounting for seven percent of total chlorine and five percent of total caustic production in 2013. As shown below, much larger quantities of chlor-alkali output are used in the manufacture of ethylene dichloride, polyvinyl chloride, organic chemicals, inorganic chemicals,

isocyanates, chlorinated intermediates, propylene oxide, pulp and paper, alumina, organic soaps and detergents and textiles:

**Figure 2: Chlorine and Caustic Soda End Uses**



Source: Reproduced from Bommaraju and O'Brien (2015)  
EDC/VCM = ethylene dichloride/vinyl chloride monomer

In the unlikely event of shortages, producers could preferentially reallocate chlorine and caustic soda from these high volume uses to drinking water treatment systems to prevent any loss of health protections. Moreover, the dire supply shortfalls predicted by the industry will not materialize if, as EPA predicts, the three producers using asbestos diaphragms convert to alternate technologies. In this event, the chlor-alkali industry will have no trouble supplying the relatively small amounts of chlorine and caustic soda needed by drinking water providers.

Even if the availability of chlorine and caustic soda is temporarily reduced during the transition from asbestos to non-asbestos processes, the solution is to lengthen the transition period, not to abandon a ban on asbestos importation and use, as the industry proposes. In [letters](#) to the EPA docket for the Part 1 rulemaking, numerous water suppliers have supported the “need to move on from the use of asbestos” but encouraged “EPA to just provide more time to manufacturers to phase out asbestos for chlorine production.”

S. 4244’s two-year timeframe for eliminating asbestos in chlor-alkali operations may be too stringent, but it is incumbent on the industry to present a credible analysis of the steps required to implement a phase-out without supply disruptions and the amount of time necessary for each step. This analysis could then be vetted by members of Congress, independent experts, stakeholders and EPA. However, the industry has chosen to engage with decision makers with alarmist rhetoric, not substance. We strongly encourage a bipartisan process of dialogue and information sharing aimed at developing a phase-out schedule that is expeditious but implementable and meets the practical needs of water suppliers and other stakeholders.

### **PFAS Concerns Do Not Justify Continued Use of Asbestos in Chlor-alkali Production**

Some chlor-alkali producers are opposing elimination of asbestos diaphragms because polymers used in the alternate membrane cell process are based on per- and polyfluoroalkyl substances (PFAS) chemistry. However, according to [EPA's Economic Analysis](#), all three cell technologies – asbestos diaphragms, non-asbestos diaphragms and membrane cells – are made from Polytetrafluoroethylene (PTFE) polymers, which are derived from PFAS. Since companies operating plants using asbestos also own plants using cell membranes and non-asbestos diaphragms, they now rely on PFAS chemistry and will use more PFAS as existing plants are refurbished and maintained.

Accordingly, it is questionable whether conversion of the eight remaining asbestos-using plants to the cell membrane process would increase PFAS production and exposure. Both membranes and diaphragms have finite life-spans and must be periodically replaced; for all technologies, the replacement units would thus require additional production and use of PTFE fibers. EPA notes that, “[a]though they contain a higher concentration of PFAS compounds, non-asbestos diaphragms and membranes have a lifespan of 3 to 5 or more years, compared to 200 to 500 days for asbestos diaphragms.” The higher replacement frequency of asbestos diaphragms could create *more* demand for PTFE and greater PFAS production than if these diaphragms were replaced by membrane cell technologies.

According to the [Department of Energy](#) (DOE), non-asbestos technologies have environmental and economic benefits that the asbestos diaphragm process lacks and for this reason “[m]embrane cells are the most environmentally benign of all the cell technologies.” The benefits of non-asbestos technologies include lower energy consumption, reduced air pollution, absence of hazardous waste and significantly lower wastewater generation. In its Environmental Guidelines for the Chlor-alkali Industry, the World Bank [recommends](#) that investors “give preference to the membrane process” based on its “economic and environmental advantages,” the absence of hazardous waste and significantly lower wastewater generation. These benefits must be weighed against PFAS concerns.

Most importantly, elimination of asbestos – a lethal carcinogen – significantly lowers human health risks. Thus, EPA states in its proposed Part 1 rule that “the benefits of removing chrysotile asbestos, a known human carcinogen that causes an aggressive and deadly cancer (mesothelioma), from continued use in the United States, are significant enough to outweigh the potential additional exposure to PFAS that might result from this action.”

### **The Definition of Asbestos in ARBAN only Applies to Commercially Mined and Used Asbestos, Not Asbestos Contaminants in Other Mineral Formations**

S. 4244 defines asbestos as follows:

(A) Commercial asbestos

(i) In general

The term commercial asbestos means asbestiform fibers that have been extracted and processed from any of the following minerals:

- (I) Chrysotile (serpentine).
- (II) Crocidolite (riebeckite).
- (III) Amosite (cummingtonite-grunerite).
- (IV) Anthophyllite asbestos.
- (V) Tremolite asbestos.
- (VI) Actinolite asbestos.
- (VII) Richterite.
- (VIII) Winchite.
- (ii) Exclusion

The term commercial asbestos does not include asbestos fibers that are not extracted or processed for the value of the asbestos fibers.

This definition reflects close consultation with stakeholders and experts and draws on the longstanding definition in the Asbestos Hazard Emergency Response Act (AHERA)<sup>23</sup>, which is reflected in numerous EPA regulations and is focused on the *asbestiform varieties* of the six recognized fiber types. Because the definition is limited to “commercial asbestos,” ARBAN only applies to asbestos mined and used “for the value of the asbestos fibers” and thus does not cover asbestos contaminants with no commercial value that are found in talc and other mineral formations. For this reason, ARBAN would not impact the US mining industry, which no longer extracts raw asbestos for sale and distribution in commerce.

#### **The ARBAN Asbestos Definition Includes the Hazardous Libby Amphibole Asbestos That Has Caused Widespread Harm in Libby Montana**

Consistent with EPA’s draft scoping document for its Part 2 asbestos risk evaluation, the definition of asbestos in S. 4244 also includes richterite and winchite asbestos fiber types. ADAO strongly supports their inclusion in S. 4244. These fiber types comprise “Libby amphibole asbestos,” which caused widespread harm to the environment and human health as a result of the now-discontinued WR Grace mining operations in Libby, Montana and processing sites throughout the nation. EPA declared a public health emergency in this small town in 2008.

According to [EPA](#), vermiculite “is a naturally-occurring mineral composed of shiny flakes, resembling mica.” The Libby mine was the source of over 70 percent of all vermiculite sold in the United States from 1919 to 1990. This vermiculite, which contained winchite and richterite, was used throughout the U.S. to produce Zonolite attic insulation, which is [estimated](#) by USGS to be in as many as 35 million US homes, buildings, and offices. During its investigations at the Libby mine,

<sup>23</sup> <https://www.epa.gov/asbestos/asbestos-laws-and-regulations#ahera>

EPA [found](#) that a total of approximately 6,109,000 tons of vermiculite concentrate were shipped to 245 sites across the country where they were used to produce Zonolite.

ARBAN will assure that Libby amphibole is never again mined and processed in the U.S. and Zonolite insulation is never installed again in U.S. homes.

#### **ARBAN Only Applies to TSCA Chemical Substances**

As an amendment to TSCA, ARBAN's scope is limited to TSCA-regulated chemical substances and does cover personal care products or cosmetics within the jurisdiction of the Food and Drug Administration. The bill's definition of commercial asbestos will therefore have no application beyond TSCA.

#### **The Reporting Provisions in S. 4244 Will Backstop and Support Effective Implementation of the Asbestos Ban**

S. 4244 also includes "right to know" requirements under which any person who has manufactured, processed, used, or distributed in commerce commercial asbestos or any mixture or article containing commercial asbestos during the 3-year period preceding that date of enactment must submit reports to EPA.

As noted above, EPA did not use its TSCA reporting authority to support its asbestos risk evaluation and there is considerable uncertainty about the asbestos-containing mixtures and articles that are imported and used in the United States. S. 4244 would fill this gap by providing essential information to EPA and the public about how, where and in what amounts asbestos and asbestos-containing products are being imported and used, and who is being exposed. This information is critical to protect the public until the ban takes effect and to make sure that the ban can be effectively enforced. EPA would be required to make the reports available to the public and summarize all the data so the public has a full picture of asbestos exposure and risk.

Under a settlement agreement with ADAO and other groups, EPA recently [proposed](#) an asbestos reporting rule under section 8(a) of TSCA that is not limited to commercial asbestos and extends to articles and mixtures in which asbestos is present as a contaminant or impurity. We believe this rule will serve a broader purpose than the reporting provisions in S. 4244 and should be finalized even if S. 4244 is enacted.

#### **CONCLUSION**

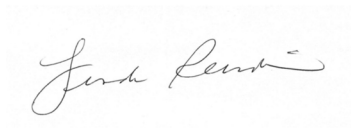
We appreciate the Committee's leadership in holding this important hearing and the support that Senator Merkley and his Senate colleagues welcome the support that many House members have voiced for this vital legislation. On behalf of ADAO and the thousands of American families that have lost loved ones to this lethal carcinogen, the workers, their families, and the public who are continually exposed, and the hundreds of thousands who have lost their lives due to this lethal carcinogen, we urge that S. 4244 be passed without delay to end the asbestos man-made disaster. We believe that a bipartisan approach that brings the industry to the table to develop a realistic but expeditious deadline for an asbestos phase-out in chlor-alkali is the best path forward and can get us to the finish line.

I wanted to close with this statement from Dr. Raja Flores, Chairman of the Department of Thoracic Surgery at Mount Sinai Hospital:

*"Members of Congress can do more with a pen to prevent asbestos-caused diseases than I can with a scalpel."*

Thank you for your commitment to public health and to protecting Americans.

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Reinstein", is centered on a light gray rectangular background.

Linda Reinstein  
President and Cofounder, Asbestos Disease Awareness Organization



**U.S. Senate EPW Subcommittee on Chemical Safety,  
Waste Management, Environmental Justice, and  
Regulatory Oversight**

Legislative Hearing on S. 4244 — Alan Reinstein Ban  
Asbestos Now Act of 2022 <sup>25</sup>

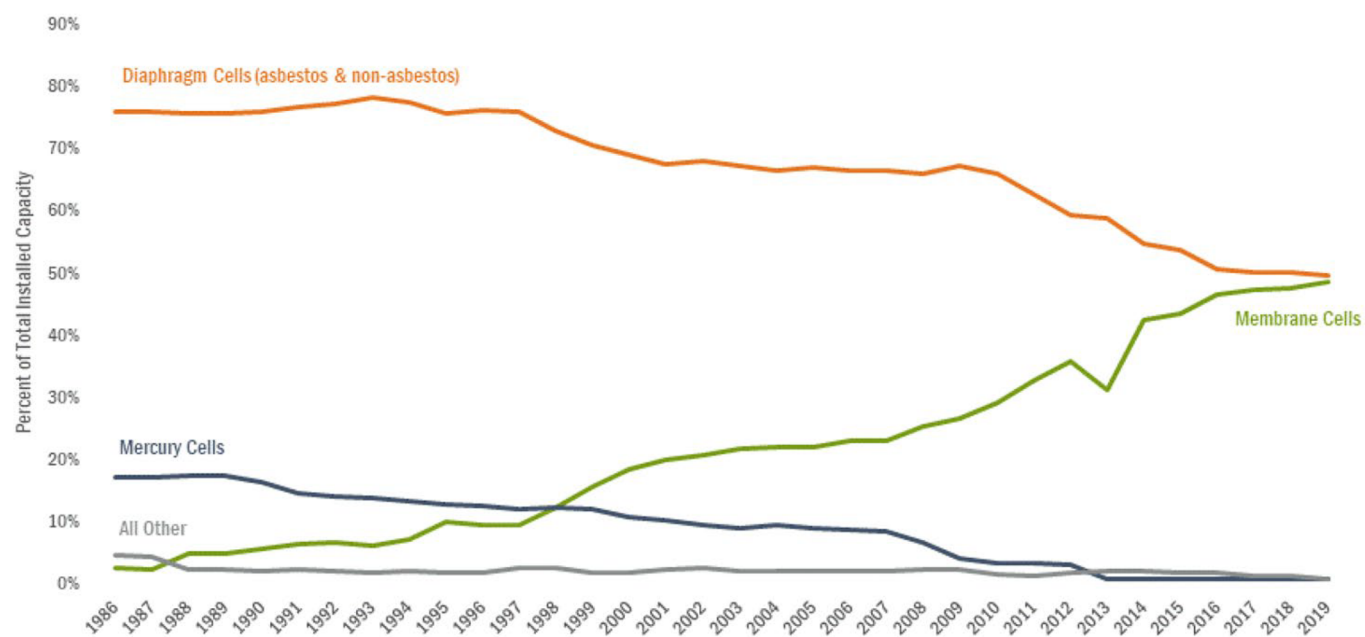
June 9, 2022

Linda Reinstein, President & Co-founder, Asbestos Disease Awareness Organization

## EPA ASBESTOS PART 1 CHRYSOTILE ASBESTOS ECONOMIC ANALYSIS

Figure ES-2: U.S. Chlorine Production Methods by Percent of Total Installed Capacity

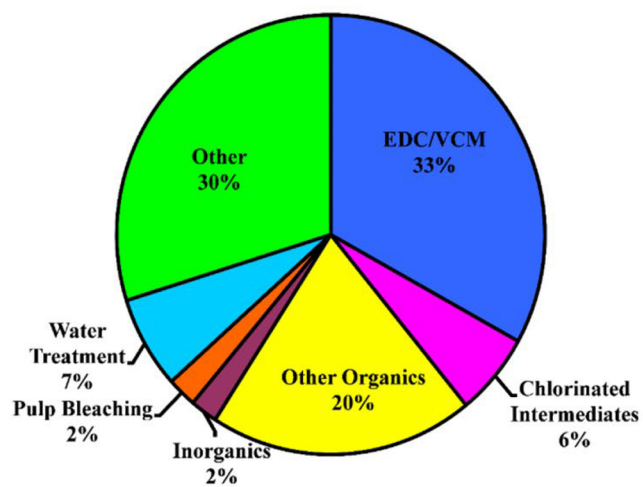
Chlor-alkali technology has shifted from **diaphragm** to **membrane cell** technology in recent decades



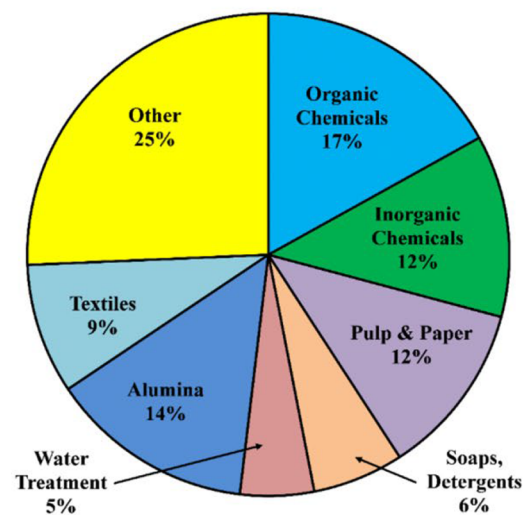
Source: The Chlorine Institute 2020

## EPA ASBESTOS PART 1 CHRYSOTILE ASBESTOS ECONOMIC ANALYSIS

**Figure 2: Chlorine and Caustic Soda End Uses**



*Fig. 1. End uses for chlorine (2013).*

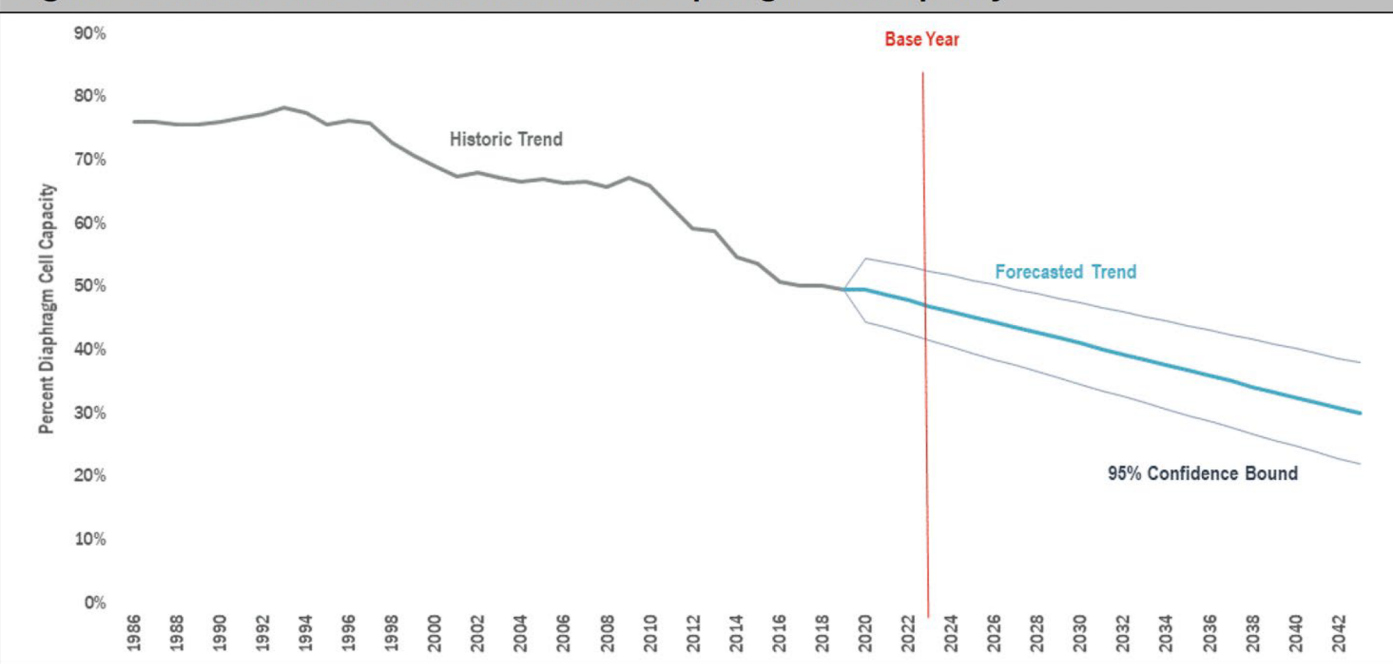


*Fig. 2 End uses for caustic soda (2013).*

Source: Reproduced from Bommaraju and O'Brien (2015)  
EDC/VCM = ethylene dichloride/vinyl chloride monomer

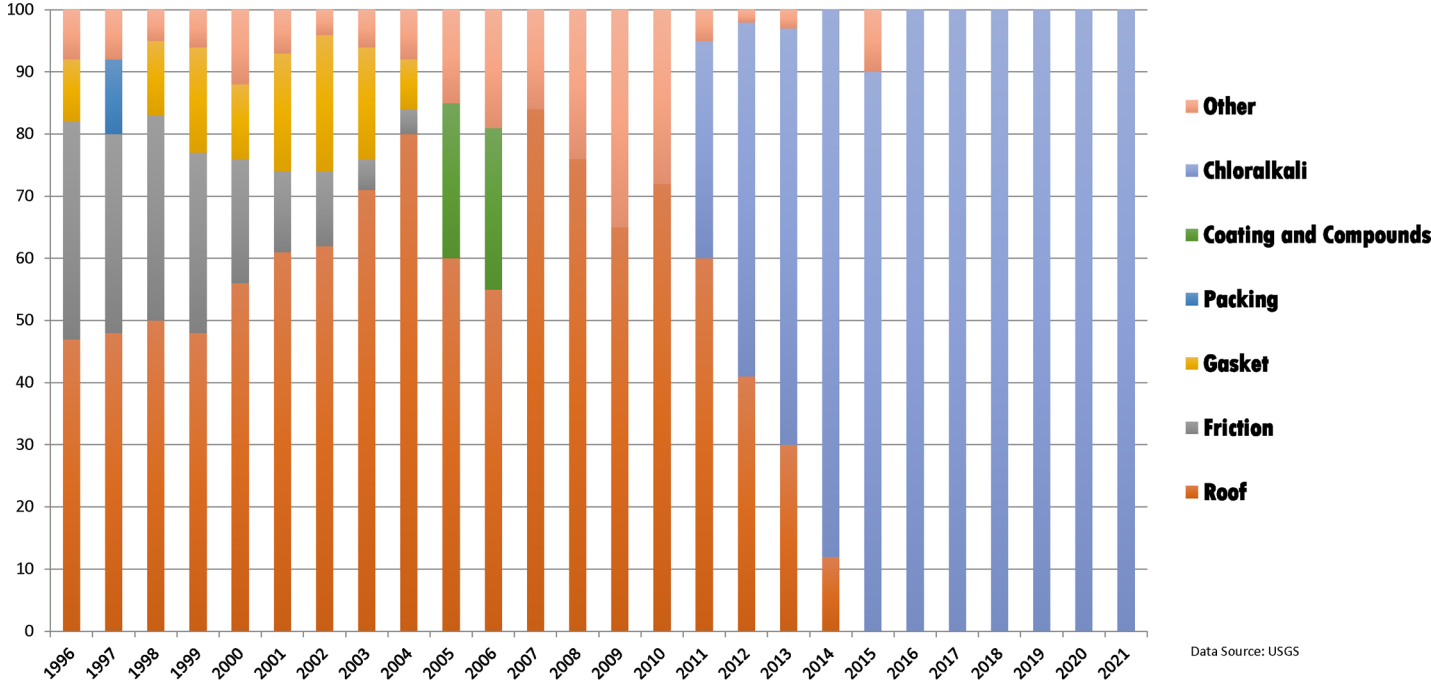
## EPA ASBESTOS PART 1 CHRYSOTILE ASBESTOS ECONOMIC ANALYSIS

**Figure 6: Historic and Forecasted Trend in Diaphragm Cell Capacity**



Source: 1980 to 2019 data from The Chlorine Institute 2020

# **ADAO Sector Analysis** **1996 - 2021 U.S. Asbestos Consumption** **Roofing, Friction, Gasket, Packing, Coating and Compounds, Chlor-Alkali**



Senator MERKLEY. Thank you very much. With your permission, we will submit the entire testimony for the record. Thank you.

I would now like to introduce our second witness, Dr. Danny Whu. Dr. Whu is the Chief Medical Officer of the International Association of Fire Fighters.

You are now recognized for your opening statement.

**STATEMENT OF DANNY WHU, M.D., CHIEF MEDICAL OFFICER,  
INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS**

Dr. WHU. Good morning, Chairman Merkley, Ranking Member Wicker, and members of the Committee. I am Dr. Whu, Chief Medical Officer of the International Association of Fire Fighters, IAFF.

Once, I had a plan to become a fire fighter-paramedic and gain some experience and then go to medical school as soon as possible. However, I fell in love with the fire fighters' mission of service to mankind and stayed for the next 30 years, becoming a division chief at a major fire department. I also became a member of FEMA Search and Rescue.

My dream of becoming a doctor never left me, though. So I kept studying and eventually received my medical doctorate and a master's in public health. Presently, I have the distinct honor to serve my brother and sister fire fighters at the IAFF, which represents more than 328,000 fire fighters and EMS personnel in all 50 States, protecting more than 80 percent of the U.S. population. We are our Nation's protectors against all hazards, 24 hours a day, 7 days a week.

IAFF President Edward Kelly sends his regards and regrets being unable to be here. Preventing cancer is one of his cornerstones, thus he sincerely appreciates your commitment to protecting fire fighters from asbestos.

Alarmingly, cancer is now a fire fighter epidemic and the leading cause of line of duty deaths. In 2019, 75 percent of such deaths were due to cancer. Numerous studies show that fire fighters have a significantly higher cancer incidence than the general population. Many have shown asbestos to be the cause. Asbestos is a proven carcinogen.

At any emergency where asbestos is present, its fibers will become airborne to be inhaled by fire fighters, or these fibers will settle on their skin, uniforms, gear, equipment, and apparatus. And when fire fighters return to the fire house, they will unknowingly bring this killer back with them and be silently and continuously re-exposed.

As a fire chief, I know that any emergency of any magnitude that disturbs structures in any way is a potential asbestos exposure. As a FEMA search and rescue doctor, I experienced this on a massive scale at 9/11, the largest asbestos job in the world. While the Towers stood, there asbestos was, allegedly safe. But then the attack happened, and just like that, 100,000+ rescuers, including me, and over a half a million New Yorkers, including children, were exposed to hundreds of thousands of tons of pulverized and aerosolized asbestos. Everyone within a 1 and a half mile radius was exposed.

Because OSHA's safe level of asbestos exposure is zero, every single exposure makes fire fighters more likely to develop lethal as-

bestos induced disease. Knowing that, it is deeply troubling that asbestos continues to be used in the U.S.

Thank you, Chairman Merkley, for supporting the Alan Reinstein Ban Asbestos Now Act, which is rooted in medical evidence that establishes causation between asbestos and cancer. Over 70 nations have banned asbestos. Sadly, the U.S. is not one of them, costing more than 40,000 Americans their lives every year. Passing this Act will right that wrong. That is why the IAFF wholeheartedly supports it.

As for legacy asbestos, currently the EPA focuses only on asbestos' present uses. However, it must also address legacy asbestos as it is required to do by law. We thank you again, Chairman Merkley, for working with us to address this danger.

In closing, given what we know today, asbestos is public enemy No. 1 and must be banned now. If you have ever seen someone die from asbestos induced mesothelioma, like me, you would have banned this poison years ago.

Asbestos proponents argue that the application of asbestos is safe. Yet they will never state that the asbestos itself is safe. Why? Because asbestos is not a possible or a probable carcinogen; it is a known carcinogen. My fellow fire fighters and I who answered the call to help on 9/11 are the poster children for exposure to allegedly safe turned certainly unsafe asbestos.

Again, OSHA says zero exposure. That latency period will bring us an asbestos induced cancer epidemic in the future. We cannot change the past. But all of you can prevent similar future tragedies simply by banning asbestos today.

Oftentimes doing the right thing is unclear. Fortunately, that is not the case today. With asbestos, just listen to your heart. The answer is already there.

I close with a verse, "For there is no greater love than to lay your life down for a friend." Fire fighters are willing and often do lay their lives down not for friends, but for total strangers. We owe it to them and their families to ban their killers like asbestos now.

Thank you. May God bless America and all the fire fighters who protect her.

[The prepared statement of Dr. Whu follows:]

**INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS**



**STATEMENT OF**

**DANNY WHU, M.D., M.P.H.  
CHIEF MEDICAL OFFICER**

**BEFORE THE SUBCOMMITTEE ON CHEMICAL SAFETY,  
WASTE MANAGEMENT, ENVIRONMENTAL JUSTICE, AND  
REGULATORY OVERSIGHT**

**OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC  
WORKS**

**UNITED STATES SENATE**

**ON**

**ALAN REINSTEIN BAN ASBESTOS NOW ACT OF 2022**

**JUNE 9, 2022  
WASHINGTON, DC**



Chairman Merkley, Ranking Member Wicker, and members of the subcommittee, thank you for the opportunity to testify before you today about the hazards that asbestos poses to fire fighters and the need to ban it from future construction and renovation projects. The International Association of Fire Fighters strongly believes it is of utmost importance to protect our first responders and community members who may not realize the risk they face from asbestos.

My name is Danny Whu and I am honored to serve as the Chief Medical Officer of the International Association of Fire Fighters (IAFF). When I was young, I dreamed of becoming a doctor. I first became a firefighter-paramedic to experience medicine as quickly as possible with the end goal being to get into medical school as soon as possible. However, I fell in love with the fire fighters' mission of service to mankind and proceeded to spend the next 30 years working in the fire service and EMS (Emergency Medical Service). I retired from the 6<sup>th</sup> largest fire-rescue and EMS department in the nation, where I served as a Division Chief for Operations, Assistant Director for the Office of Emergency Management, and Deputy Incident Commander of its Emergency Operations Center.

In 1992, I joined one of FEMA's (Federal Emergency Management Agency) newly formed Urban Search & Rescue Teams; Florida Task Force-1. Since then, I have had the honor to respond to many national and international missions to help, and one that will be important to mention today is my deployment to 9/11. Since my dream of becoming a doctor never left me, I put myself through medical school while working as a fire fighter. Afterward, I received both my medical doctorate and a master's in public health.

As you may know, the IAFF represents more than 328,000 professional fire fighters and EMS personnel. Our members serve communities in all 50 states and protect more than 80% of the United States' population. The IAFF's members work as our nation's all-hazards emergency responders and protect their communities from a wide range of emergencies, including structural fires, wildland fires, building collapses, natural disasters, terrorist incidents, and more.

While the IAFF is active in many policy areas, none is more important than our work to ensure the health and safety of fire fighters. For more than 100 years, the IAFF has been proud to be the nation's leading voice on health and safety issues impacting the fire service. The IAFF diligently works to research threats facing our fire fighters and recommends ways to mitigate these threats. Our work has helped advance the research agenda of institutions such as the Occupational Safety and Health Administration (OSHA), the National Institute of Health (NIH), and the Centers for Disease Control and Prevention (CDC). IAFF General President Edward Kelly's vision is to further connect the IAFF with leading research, academic, and scientific institutions in order to advance our mission-critical charge of protecting fire fighters from all the hazards we face. This is why I stand here today as the first Chief Medical Officer in IAFF history. The IAFF's commitment to improving fire fighter health and safety is unwavering.

Furthermore, IAFF General President Kelly would like to extend his apologies for being unable to attend the hearing today, as he is attending a pre-scheduled meeting with the IAFF Board of Directors. General President Kelly sincerely appreciates the Subcommittee's interest in protecting fire fighters from all forms of carcinogens, including asbestos. Preventing occurrences

of cancer has been a cornerstone of General President Kelly's, and he deeply appreciates your partnership in protecting the health of fire fighters and the general public alike.

### **Cancer Among Fire Fighters**

Fire fighters often work in austere and hostile conditions when serving their communities and are routinely exposed to a variety of carcinogens. In fact, fire fighters are surrounded by these killers daily. These carcinogens are clearly in the smoke produced by structural and wildland fires and in the building debris fire fighters sift through when working on emergency scenes. They are even present in fire fighters' protective gear; for example, the PFAS (Per- and Polyfluoroalkyl Substances) chemicals applied to our gear is heavily carcinogenic. These daily exposures to carcinogens have made cancer the leading cause of fire fighter line of duty deaths. The IAFF maintains a memorial for our fallen brothers and sisters. Each year, the IAFF holds a ceremony where we add to the memorial the names of fire fighters who died in the line of duty from the previous year. Occupational cancer is such a hazard for fire fighters that 75% of the names we added to the memorial in 2019 were occupational cancer deaths.<sup>1</sup> We have not held our fallen fire fighter memorial for the last two years because of Covid, but will be holding our annual Memorial Service this year September 17. I invite all of you to join us for this solemn gathering and remembrance.

Numerous studies of fire fighters in the United States and Europe have consistently shown that fire fighters are significantly more likely than the average person to develop various types of cancer. In 2013, NIOSH published a study of nearly 30,000 fire fighters from San Francisco, Chicago, and Philadelphia. The study tracked fire fighters from 1950 to 2009 and found that fire fighters were 14% more likely to die from cancer than the average person. This study further showed that fire fighters were at a 100% increased risk of developing mesothelioma, a 45% increased risk of developing rectal cancer, and a 40% increased risk of developing buccal/pharynx and esophageal cancer, among other types of cancers.<sup>2</sup> The NIOSH study findings were largely consistent with another study published in 2014, which examined nearly 16,500 fire fighters in five Nordic nations.<sup>3</sup>

The IAFF is grateful that Congress established the National Firefighter Registry (NFR) program within the CDC several years ago (P.L. 115-94). The NFR will be an essential tool to identify and track fire fighters from across the nation who develop cancer. These data will be invaluable in showing us the most significant cancer risks in the fire service and help us identify ways to prevent fire fighters from battling this disease. As we look towards to the FY 2023 appropriations cycle, we urge Congress to fully fund the Registry at the \$5.5 million level that the CDC has requested. This increase in funding is needed to ensure the Registry meets current federal cybersecurity standards and can begin tracking participants.

<sup>1</sup> <https://www.iaff.org/cancer/#ff-cancer-awareness-month>

<sup>2</sup> Daniels RD, Kubale TL, Yiin JH, et al. Mortality and cancer incidence in a pool cohort of US firefighters from San Francisco, Chicago, and Philadelphia (1950-2009). *Occup Environ Med*. Published Online First: [14 Oct 2013] doi:10.1136/oemed-2013-101662

<sup>3</sup> Pukkala, E, et al. (2014). "Cancer Incidence among firefighters: 45 years of follow-up in five Nordic countries *J Occup Environ Med* 71:398-404.

### **Asbestos Poses a Unique Risk**

Unlike some of the newer carcinogens that we are still studying, we already have proof-positive knowledge of asbestos' carcinogenicity. Asbestos was once thought to be a miracle compound that could shield people and buildings from fires. Unfortunately, it has turned into a nightmare that haunts fire fighters and wreaks havoc in their lives. Studies have shown that asbestos exposures are linked to causing a variety of cancers, including cancer of the pharynx, stomach, colon and rectum, larynx, lung, ovaries, and mesothelium.<sup>4 5</sup>

Fire fighters are exposed to asbestos in a variety of ways. When we respond to fires, we rapidly breach walls, ceilings, and other building structures to save lives and extinguish any fire extensions that may be hidden. In the course of this work, any asbestos fibers present will unavoidably become airborne and present a clear and present danger to fire fighters. After this initial exposure during active firefighting operations, asbestos fibers can remain on our turnout gear which contributes to moving these deadly fibers onto our uniforms, which furthers the spread to the interior of our trucks and fire stations. During active fire conditions, asbestos fibers are lifted into the air as a component of smoke where it then falls onto fire fighters, their equipment and apparatus. Consequently, fire fighters will inhale large amounts of asbestos fibers before we can decontaminate ourselves, gear and apparatus following a call. It is now well known to fire fighters that this secondary exposure increases our risk of developing asbestos-related diseases such as mesothelioma (lung cancer) and asbestosis. Even in the face of these known daily risks, fire fighters still answer all calls for help without fail, 24/7.

Fire fighters also routinely respond to partial and complete building collapses. These incidents produce even more significant asbestos exposures for fire fighters due to greater volumes of asbestos fibers being released into the air. Fire fighters tasked with locating and rescuing victims from the collapse face significant exposures when crawling through debris from the collapsed building.

As the Medical Team Manager for FEMA's Urban Search & Rescue, Florida Task Force-1, I have experienced and seen these exposures firsthand. By far, the most serious asbestos-related exposure of my career has been the search and rescue mission in the aftermath of 9/11. Massive amounts of asbestos were released into the air that day posing a serious threat to the emergency responders who worked around the clock to rescue and recover victims. The effects of this exposure can be seen in the more than 270 fire fighters who have since died from 9/11-related illnesses – a number rapidly approaching the 343 fire fighters we lost on 9/11.

Speaking from my other role as a fire fighter chief, I saw asbestos exposures happen on "routine" emergency responses too. Building collapses, fires in structures built before the 1970s, and responses to industrial facilities can all be common exposures that fire fighters experience throughout our careers.

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<sup>4</sup> <https://monographs.iarc.who.int/wp-content/uploads/2018/07/Table4.pdf>

<sup>5</sup> Markowitz SB, Garibaldi K, Lillis R, et al. Asbestos and fire fighting. *Ann N Y Acad Sci* 1991;643:573–81.

Regardless of what type of emergency fire fighters are responding to or how long they have been serving, it is essential to remember that OSHA has noted that there is no “safe level” of exposure to asbestos.<sup>6</sup> Every exposure that fire fighters experience makes them more likely to develop a debilitating, and all too often lethal form of cancer.

The IAFF is deeply troubled by the fact that asbestos continues to be used in commercial buildings and construction projects despite our common knowledge of the lethality of asbestos exposure, such as those that fire fighters regularly experience. Congress must protect the lives of the public who live and work in asbestos-filled buildings and the fire fighters who will eventually respond to emergencies and be exposed to these known carcinogens. The federal government took similar actions in 1978 when it banned the sale of lead-based paint after medical evidence proved the danger that these paints posed to all people, especially small children. We face a similar threat from asbestos today and need Congress to act to reverse it.

#### **Alan Reinstein Ban Asbestos Now Act (ARBAN) Act of 2022**

The IAFF is proud to have worked closely with Chairman Merkley, Representative Suzanne Bonamici (D-WA), and other industry stakeholders to support the development and introduction of the Alan Reinstein Ban Asbestos Now Act of 2022. This pivotal legislation builds on extensive medical evidence that proves the causal link between asbestos and cancer. Nearly every major nation in the world has acted on this information and banned the use of asbestos materials during the construction of buildings. Canada, the United Kingdom, Japan, Australia, and all European Union member nations, are among the 70 nations which have banned the manufacturing, sale, import, or export of asbestos.<sup>7</sup> Despite the prohibitions on importation of asbestos in those 70 countries, the US continues to import more than 100 metric tons of carcinogenic asbestos fibers each year. Sadly, the US, where more than 15,000 Americans die from asbestos-related illnesses every year, is the only industrialized nation that is yet to ban this killer substance.

Given the vast array of medical evidence proving the carcinogenic nature of asbestos, it is alarming that the federal government continues to permit the use of asbestos material during building construction projects in the United States. Fire fighters’ health and lives will continue to be jeopardized as long as asbestos continues to be commercially available for use in building construction. The IAFF wholeheartedly endorses the ARBAN Act of 2022, as it will prohibit the manufacturing, importation, distribution, sale, and use of commercial asbestos products. Banning this carcinogen from future building projects is key to reducing cancer incidence rates among fire fighters.

While the IAFF appreciates the opportunity to address commercially available asbestos, equally important is to address the topic of legacy asbestos. Fire departments across the nation, particularly those serving historic jurisdictions, know well the dangers of responding to fires and other emergencies in homes and buildings built when the dangers of asbestos were not publicly

<sup>6</sup> U.S. Department of Labor. Occupational Safety and Health Administration. Safety and Health Topics. Asbestos. <https://www.osha.gov/SLTC/asbestos/>. Accessed August 22, 2017.

<sup>7</sup> <https://www.asbestosdiseaseawareness.org/newsroom/blogs/adao-resource-nearly-70-countries-have-banned-asbestos-but-the-usa-is-not-on-the-list/>

known. Developing a policy solution to address the dangers posed by legacy asbestos is much more challenging. We appreciate Chairman Merkley's commitment to working with us to find pathways to address these dangers.

The IAFF is also aware that the Environmental Protection Agency (EPA) would prefer to focus its regulatory efforts on "occurring or reasonably foreseen" uses of asbestos, rather than evaluating the legacy use of asbestos. However, the EPA must do this and is required to do so by law. Our members are one of the many reasons legacy uses must be evaluated, addressed, and resolved. Exposures due to legacy asbestos occur whether or not fire fighters are aware of it. One study of New York City fire fighters found that these individuals have an increased risk of developing asbestos-induced pulmonary and pleural fibrosis, including those with no history of asbestos exposures other than from their career as a fire fighter.<sup>8</sup>

Not only do we want the EPA to look at fire fighters and their exposures as a susceptible subpopulation, but we would also like the EPA to create a requirement for inspection of commercial buildings or industrial facilities to identify where asbestos may be present. For our members to have the knowledge of what buildings have asbestos and which do not, would significantly improve our planning and prevention of asbestos exposure, thus reducing the incidence of mesothelioma and other asbestos-related diseases.

#### **Feder Firefighters Fairness Act of 2021 (S. 1116/H.R. 2499)**

As I mentioned earlier, the IAFF is deeply committed to addressing all forms of cancer that fire fighters face. One of the most critical components of the IAFF's mission is ensuring all fire fighters can access the medical care and support they need when battling this relentless illness. Today, 49 out of 50 states provide presumptive workers' compensation benefits for fire fighters who develop cancer. These 49 states have enacted those policies following the clear evidence mentioned earlier, which shows that fire fighters are significantly more likely than the average person to develop cancer. Numerous studies have shown that this increased risk is due to fire fighters' routine exposure to carcinogens such as asbestos and PFAS, which are used when manufacturing fire fighters' protective equipment and common household products.

Despite this clear medical evidence linking a career in firefighting with an increased likelihood of developing cancer, the federal government does not provide a similar presumptive benefit for the federal fire fighters who protect military installations, research laboratories, or suppress wildland fires. Historically, federal fire fighters have faced steep hurdles in accessing their earned workers' compensation benefits. They have been required to identify which specific fires in their careers resulted in their cancer diagnoses. This burden of proof is nearly impossible to meet as fire fighters respond to thousands of incidents across their careers. This impossibly high standard has resulted in countless federal fire fighters being denied the benefits and support they have earned when they need it most.

While the U.S. Department of Labor recently announced some procedural changes to assist fire fighters in accessing their benefits, statutory limitations prevented this policy change from truly providing the automatic benefits that federal fire fighters deserve. The IAFF applauds Senators

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<sup>8</sup> Markowitz SB, Garibaldi K, Lillis R, et al. Asbestos and fire fighting. *Ann N Y Acad Sci* 1991;643:573–81.

Tom Carper and Susan Collins for introducing the Federal Firefighter Fairness Act which would provide presumptive workers' compensation benefits for federal fire fighters with at least five years of service who develop cancer. In May, this critical legislation was passed in the House on a strongly bipartisan basis. The Senate Committee on Homeland Security and Governmental Affairs marked up and unanimously approved the legislation several weeks ago. The IAFF urges the Senate to take up S. 1116 and bring the bill to a final vote.

#### **Medicare Multi-Cancer Early Detection Screening Coverage Act (H.R. 1946/S. 1873)**

As I mentioned earlier, cancer-related deaths are by far the most common cause of line of duty deaths for fire fighters. This number far exceeds fire fighters' deaths due to heart attacks, smoke inhalation, burns, vehicular accidents, and other fatal injuries. It is well known that early cancer detection saves lives, lowers treatment costs, and increases patients' quality of life. In fact, the average five-year survival rate for most cancers is almost 90% when the cancer is found in its early stages. Sadly, only five cancers have available screenings (breast, cervical, colon, lung, and prostate) paid for in public programs, such as Medicare. Fire fighters are at increased risk for many cancers beyond the five types with screenings. We need more tools that can identify more cancers early.

The IAFF is pleased to endorse the Medicare Multi-Cancer Early Detection Screening Coverage Act of 2021 (H.R. 1946/S. 1873). There is incredible promise surrounding developing and implementing blood-based multi-cancer screenings, and ensuring access to them is critical. This legislation would help ensure there is no delay in access for Medicare beneficiaries to multi-cancer detection once the Food and Drug Administration approves it. Enabling fire fighters and retirees to have access to these early detection screenings makes good policy sense when considering the improved health outcomes it will produce and the savings to the Medicare program by preventing Medicare beneficiaries from requiring more aggressive and costly medical treatments for their health conditions.

Supporting access to early cancer screenings also is an important component to the IAFF's recent partnership with the American Cancer Society (ACS). Given ACS' status as the nation's leading cancer advocacy organization, the IAFF is looking forward to collaborating with the ACS and our fire service partners such as the Firefighter Cancer Support Network, all of whom are dedicated to addressing the cancer epidemic in our profession and promoting the needs of America's fire fighters among those researching cancer and advancing meaningful treatments. The IAFF is hoping to work with the ACS to also promote a nationwide annual cancer screening initiative for all fire fighters throughout the United States. This initiative would be essential to providing fire fighters with a baseline assessment of their health and the ability to identify any potentially worrisome health conditions while they are still treatable and in their earliest stages.

#### **Conclusion**

I am sincerely grateful for the opportunity to speak with this distinguished subcommittee on the need to ban the sale, importation, distribution, manufacturing, and use of commercial asbestos products. We have long known the devastating health effects of chronic exposures to asbestos, and it is now overdue that we stop the continued proliferation of these carcinogens. Our brother

and sister fire fighters across the United States are surrounded by carcinogens every day and it is incumbent upon us to remove as many of those dangers as we can.

The ARBAN Act of 2022 is a common-sense bill that will ban asbestos and bring the United States in line with nearly every other industrialized nation. The IAFF is pleased to support this bill as it will help reduce a significant source of cancer exposure that fire fighters face on a daily basis. It is time that we align our laws and regulations with the scientific evidence that we know to be true. Fire fighters across the United States are suffering every day while fighting for their lives against cancer diagnoses. We owe it to these men and women to eliminate every possible hazard they face. Asbestos is a known carcinogen and must be prevented from being incorporated into more buildings and construction projects throughout the nation.

Furthermore, the IAFF urges the Senate to advance the Federal Firefighter Fairness Act of 2021 and the Medicare Multi-Cancer Early Detection Screening Coverage Act of 2021. Much like the ARBAN Act of 2022, these two pieces of legislation represent easy ways to ensure our brother and sister fire fighters battling cancer are given every advantage in their battles. Fire fighters and EMS personnel serve on the frontlines of our communities to protect us from unimaginable dangers and threats. Now is the time for Congress to take care of them in their time of need.

This Subcommittee may be familiar with arguments that the application of asbestos is safe, as long as the asbestos remains undisturbed. However, these arguments will never state that asbestos itself is safe, since it is undeniable common knowledge that asbestos inhalation poses a lethal risk. Asbestos is not a possible or probable carcinogen; it is a *known* carcinogen. There is evidence to suggest that a single asbestos fiber may be enough to cause asbestosis and mesothelioma. What obscures these conditions is the decades-long latency period of their onset. Decades are a long time, unless it is decades of *your* life, then it becomes a very short interval. I often say biostatistics are only statistics when they happen to someone else. Once it happens to you, *you* are the statistic, and there is 100% incidence upon yourself.

My fellow fire fighters and I who responded to the 9/11 terror attacks are the poster children for exposure to safe asbestos made unsafe. During construction of the World Trade Center's north tower, the first 40 floors were coated with asbestos. As the dangers of asbestos were already becoming known by then, the builders discontinued its use for the rest of the towers' construction. The already "safely" applied asbestos was simply abated in place and rendered "safe", according to them. What happened next is that I, and tens of thousands of fire fighters, EMS personnel, police officers, rescue workers, tradesmen, civilian volunteers, and clean-up crews were exposed to hundreds of thousands of tons of "properly applied and abated" asbestos that had now been pulverized and aerosolized. Equally exposed were the over half a million New Yorkers and school children that were told the area was safe to return to. We now know that the 9/11 dust cloud contained approximately 0.8% asbestos and anyone within 1.5 miles of Ground Zero was at risk of asbestos exposure. Please recall that, as OSHA has noted, there is no safe exposure level for asbestos.

Because of asbestos' latency period, approximately 30 to 40 years from 9/11, there will be an increased incidence of asbestos-induced diseases and cancers. So, in 10 to 20 years from now, we will see that nightmare for countless Americans that responded to, or were nearby Ground

Zero. And while we cannot change the past, we can prevent future tragedies by banning this known carcinogen now. Oftentimes, doing the right thing is unclear. Fortunately, that is not the case with asbestos. When it comes to a known carcinogen like asbestos, Congress must protect the lives of our fire fighters and the general public now.

I close with this; For there is no greater love than to lay your life down for a friend. Fire fighters are willing, and too often do, lay their lives down not for friends, but for strangers. We owe it to our fire fighters to ensure their safety by banning proven killers such as asbestos. Thank you again for the opportunity to testify before you today. I stand ready to answer any questions you may have and provide any additional information that you may need.



Senator MERKLEY. Thank you very much for your testimony, Dr. Whu, and for your service, and the service of all our fire fighters.

Now we will turn to Mr. David Boone, who is the general manager of the Copiah Water Association in Copiah County, Mississippi.

We are now ready for your opening statement.

**STATEMENT OF DAVID LEE BOONE,  
GENERAL MANAGER, COPIAH WATER ASSOCIATION**

Mr. BOONE. Good morning, Chairman Merkley, Ranking Member Wicker, and members of the Subcommittee. It is an honor to testify before the Subcommittee regarding one of the most significant public health concerns affecting every person in the country, the public's drinking water safety.

I am David Boone, the general manager of Copiah Water Association in rural Mississippi, a non-profit and locally governed organization that provides public drinking water to our 2,400 customers and an industrial park. I have 34 years of experience in the water industry, and I am here also representing the Mississippi Rural Water Association which has a membership of 1,050 communities with public drinking water systems, and the National Rural Water Association, which has a membership of approximately 31,000 communities with public drinking water systems across the country.

Our member communities and drinking water utilities have the very important public responsibility of supplying the public with safe drinking water and sanitation at home, work, and public spaces every second of every day, all the while complying with all applicable U.S. Environmental Protection Agency regulations. On behalf of every small and rural community in Mississippi, I want to take this opportunity to personally thank you, Senator Wicker, for all your help and support for passing a number of bills to provide us with technical assistance that helps us comply with all Federal water regulations, to help us secure funding for the numerous water infrastructure projects throughout the State, and supporting the training and employment of new water operators in the water work force. Thank you, Senator Wicker.

I am here before you today because my public drinking water supply in Copiah County, Mississippi, like nearly all other 49,680 community drinking water systems in the country, depends on chlorine based disinfection to ensure that our drinking water is safe for the public to drink.

The killing or deactivation of potentially deadly pathogens, viruses, bacteria, and other microbes by chlorine based disinfection is the most fundamental and essential part of public drinking water treatment. There is no alternative disinfection treatment that is as effective, safe, or affordable as chlorine.

We purchase approximately 10 150 pound canisters of chlorine gas each month to meet the demand. Unfortunately, when I put the order in 2 months ago, our local chlorine distributor informed us that they were out of chlorine. This problem caused a bit of a local panic, as many of my neighboring drinking water suppliers were facing the same lack of supply. We could not find another chlorine distributor in the State. If we did not find an alternative source of chlorine, we all would have been forced to issue boil water

notices to the public, resulting in a public health crisis for our affected communities.

After an aggressive search, we found a chlorine supplier in Tennessee. However, this solution came at a high cost to our community. Our monthly supply of chlorine gas has almost tripled in price. It is now over \$4,000 compared to less than \$1,500 just 2 years ago.

We have been forced to pass on the increased costs to our local customers in the form of rate increases. In a rural community with such a high percentage of people living at or near poverty level, any rate increase is unaffordable for many residents. We managed to limit the most recent rate increase to 14 percent for now.

However, even with this relatively small rate increase, we are seeing adverse public health impacts. For the last 2 months, we have witnessed approximately double the number of households that can no longer afford to pay their water bills. Our already financially strapped water utility has been forced to develop alternative payment plans for an increasing number of distressed customers.

We often hear about many low and fixed income households choosing to pay their water bill using funds that would have been previously used for food, medicine, or other necessities. The adverse consequences of rate increases on our low and fixed income neighbors is the most pressing concern for our locally elected volunteer board of directors. These public servants have the very challenging responsibility of keeping a safe water supply operating, and at the same time, keeping the water service affordable for the most vulnerable households. Moreover, we are facing more unplanned expenditures and likely rate increases resulting from the current lack of a stable chlorine supply.

Chlorine costs and supply are becoming a major factor in the sustainability of the Copiah Water Association and many thousands of drinking water utilities across the country. So you can understand our concern when we hear circumstances that may have the potential to decrease supply and increase the price of chlorine. During the pandemic, water and wastewater utilities were designed as essential emergency personnel by the Federal Government. We could not have protected the public health and provided safe drinking water without an adequate chlorine supply.

In closing, Mr. Chairman, I would like to thank you again for allowing the voice of small and rural drinking water utilities which make up about 90 percent of the country's just over 49,000 community drinking water systems to participate in this hearing. I am very happy to answer any questions.

[The prepared statement of Mr. Boone follows:]

Testimony of

**David Boone**

On Behalf of the

**Copiah Water Association (Mississippi)**

**Mississippi Rural Water Association**

**National Rural Water Association**

Before the

**Subcommittee on Chemical Safety, Waste Management, Environmental Justice,  
and Regulatory Oversight**

**Committee on Environment and Public Works**

**United States Senate**

**June 9, 2022**

**S.4244 - Alan Reinstein Ban Asbestos Now Act of 2022**

Good morning Chairman Merkley, Ranking Senator Wicker, and members of the subcommittee. It is an honor to testify before the subcommittee regarding one of the most significant public health concerns affecting every person in the country: the public's drinking water safety.

I am David Boone, the General Manager of the Copiah Water Association in rural Mississippi, a non-profit and locally governed organization that provides public drinking water to our 2,400 customers and an industrial park. I have 34 years of experience in the water industry and am here also representing the Mississippi Rural Water Association which has a membership of 1,050 communities with public drinking water systems, and the National Rural Water Association, which has a membership of approximately 31,000 communities with public drinking water systems across the country. Our member communities and drinking water utilities have the very important public responsibility of supplying the public with safe drinking water and sanitation at home, work, and public spaces - every second of every day – all the while complying with all applicable U.S. Environmental Protection Agency (EPA) regulations.

On behalf of every small and rural community in Mississippi, I want to take this opportunity to personally thank you, Senator Wicker, for all your help and support - from

passing a number of bills to provide us with technical assistance that helps us comply with all the federal water regulations, to helping secure funding for numerous water infrastructure projects throughout the state, and supporting the training and employment of new water operators entering the water workforce - thank you Senator Wicker.

I am here before you today because my public drinking water supply in Copeiah County, Mississippi - like nearly all the other 49,680 community drinking water systems in the country - depends on chlorine-based disinfection to ensure that our drinking water is safe for the public to drink. The killing or deactivation of potentially deadly pathogens, viruses, bacteria, and other microbes by chlorine-based disinfection is the most fundamental and essential part of public drinking water treatment. There is no alternative disinfection treatment as effective, safe, and affordable as chlorine. The common use of chlorine-based disinfection in public drinking water supplies - beginning at the turn of the 20th century - is widely recognized as one of the greatest public health achievements in history. In fact, chlorine disinfection has been so successful that freedom from epidemics of waterborne diseases is now virtually taken for granted in our nation.

My three main points here today are to explain the following issues:

- One, any regulatory or legislative actions that increase the cost of chlorine or reduce the supply will have real-adverse public health consequences on many of our fellow citizens;
- Two, those adverse public health effects will fall disproportionately on low-income people, including people on fixed incomes, as well as vulnerable infants and the elderly; and
- Three, public drinking water suppliers are currently experiencing near-perilous shortages and steep cost increases of the essential chlorine to keep public drinking water safe.

My current experience in operating our public drinking water in Copeiah County highlights examples of these three conceptual points.

To serve drinking water to our population and businesses, we treat approximately 1.6 million gallons of drinking water each day and distribute finished water through 900 miles of pipe. Gaseous chlorine is critical for us to maintain a chlorine residual throughout the system in compliance with the federal Safe Drinking Water Act. This service requires about 20 pounds of gaseous chlorine each day. To pay for all the treatment, storage, operators, distribution system, maintenance, replacement, repair and other features of the water system, we charge \$24 for a minimum 2,000 gallons per month and \$5 per 1,000 gallons for any additional usage. Our community is approximately 60 percent minority and 75 percent low-income.

We purchase approximately 10 - 150 pound canisters of chlorine gas each month to meet the demand. Unfortunately, when I put in the order two months ago, our local chlorine distributor informed us that they were out of chlorine and did not foresee any future supplies on the way. This problem caused a bit of local panic as many of my neighboring drinking water supplies were facing the same lack of supply, and we could not find another chlorine distributor in the state. If we did not find an alternative source of chlorine, we all would have been forced to issue "boil water orders" to the public, resulting in a public health crisis for our affected communities. After an aggressive search and some expanded networking with other water utilities, we found a chlorine supplier in Tennessee. However, this solution came at a high cost to our community. Our monthly supply of chlorine gas has almost tripled in price - it is now over \$4,000 compared to less than \$1,500 just two years ago.

We have been forced to pass on the increased cost of operating the utility to the local customers in the form of rate increases. Our board of directors continuously struggles to adopt operating plans to meet our financial obligations without raising the rate that will jeopardize our low and fixed-income neighbors' ability to afford their water service. However, in a rural community with such a high percentage of people living at or near the poverty rate, any rate increase is unaffordable for many residents. We managed to limit the most recent rate increase to only \$3 a month - for now. However, even with this

relatively small rate increase, we are seeing adverse public health impacts. For the last two months, we witnessed approximately double the number of households that could no longer afford to pay their water bills. Our already financially strapped water utility has been forced to develop alternative payment plans for increasing numbers of distressed customers. We work with each customer in distress to allow the minimum payment to ensure water service and agree on a feasible long-term payment plan. We often hear about many low and fixed-income households choosing to pay their water bill using funds that would have previously been used for food, medicine, or other necessities.

The adverse consequences of rate increases on our low and fixed-income neighbors is the most pressing concern for our locally elected volunteer board of directors. These public servants have the very challenging responsibility of keeping a safe water supply operating, and at the same time keeping water service affordable for the most vulnerable households. Moreover, we are facing more unplanned expenditures and likely rate increases resulting from the current lack of a stable chlorine supply. These conditions are forcing us to consider increasing our ability to stockpile more chlorine by building additional storage capacity, if at all possible, at a cost of \$15,000 per each of our five treatment locations. This expense would be very high and would also have to be absorbed by our already strained rate-payers.

Chlorine cost and supply are becoming a major factor in the sustainability of the Copiah Water Association and many thousands of drinking water utilities across the country. So you can understand our concern when we hear of circumstances that may have the potential to decrease supply and increase the price of chlorine disinfection products. According to the EPA, a proposed ban on asbestos diaphragms that are used to produce chlorine under new EPA regulation or through new legislation "could impact approximately 30% of domestic chlorine production capacity." And you can also understand our concern over EPA's warning "that the resulting conversion of existing chlorine manufacturing facilities that currently use asbestos diaphragms would be

expensive, and the cost of conversion could be passed on to customers, including drinking water and wastewater systems.”

Therefore, I have significant concerns that drinking water systems like mine may be left on the hook to deal with the ensuing chlorine shortages and price increases at a time when our ratepayers can ill-afford additional costs.

Lastly, I would like to recognize the water industry for their loyal dedication during the darkest hours of the pandemic. When the pandemic was hitting hard, water and wastewater utility operators were designated as “essential emergency personnel” by the federal government.

In closing, Mr. Chairman, I would like to thank you again for allowing the voice of small and rural drinking water utilities to participate in this hearing. We make up about 90 percent of the country’s just over 49,000 community drinking water systems. And we appreciate the opportunity to explain the potential adverse public health impacts of cost increases and shortages of chlorine supplies. We urge you to consider these adverse impacts on the public as you consider environmental regulatory policy and legislation that may impact the nation’s chlorine supply and cost. I am happy to answer any questions.

David Boone  
Copiah Water Association (Mississippi)  
Mississippi Rural Water Association  
National Rural Water Association

July 6, 2022

**Questions for the Record: June 9, 2022 Senate EPW Subcommittee Legislative Hearing on Asbestos**

**Senator Capito:**

**1. Can you speak to the advantages of using chlorine gas compared to liquid chlorine or other disinfectants?**

*To serve drinking water to our population and businesses, we treat approximately 1.6 million gallons of drinking water each day and distribute finished water through 900 miles of pipe. Gaseous chlorine is critical for us to maintain a chlorine residual throughout the system in compliance with the federal Safe Drinking Water Act. This service requires about 20 pounds of gaseous chlorine each day. The advantages of gaseous chlorine compared to liquid chlorine are:*

- 1. It is far superior in maintaining a chlorine residual in the distribution system which is a necessary compliance requirement and public health protection measure.*
- 2. It is a more reliable disinfection method at our central treatment works.*
- 3. The treatment process used to inject the gaseous chlorine is more reliable than the liquid chlorine treatment and more simple to maintain/operate.*
- 4. Storage and handling of gaseous chlorine canisters is preferable for our operators and there is no degradation of the effectiveness of gaseous chlorine in storage, unlike liquid chlorine.*

**2. Are you concerned about the availability of chlorine gas should this legislation become law?**

*Yes, you can understand our concern when we hear of circumstances that may have the potential to decrease supply and increase the price of chlorine disinfection products. According to the EPA, a proposed ban on asbestos diaphragms that are used to produce chlorine under new EPA regulation or through new legislation "could impact approximately 30% of domestic chlorine production capacity." And you can also understand our concern over EPA's warning "that the resulting conversion of existing chlorine manufacturing facilities that currently use asbestos diaphragms would be expensive, and the cost of conversion could be passed on to customers, including drinking water and wastewater systems." Chlorine cost and supply are becoming a major factor in the sustainability of the Copiah Water Association and many thousands of drinking water utilities across the country. When I put in the order two months ago, our local chlorine distributor informed us that they were out of chlorine and did not foresee any future supplies on the way. This problem caused a bit of local panic as many of my neighboring drinking water supplies were facing the same lack of supply, and we could not find another chlorine distributor in the state. If we did not find an alternative source of chlorine, we all would have been forced to issue "boil water orders" to the public, resulting in a public health crisis for our affected communities. After an aggressive search and some expanded networking with other water utilities, we found a chlorine supplier in Tennessee. However, this solution came at a high cost to our community. Our monthly supply of chlorine gas has almost*



*tripled in price - it is now over \$4,000 compared to less than \$1,500 just two years ago. We have been forced to pass on the increased cost of operating the utility to the local customers in the form of rate increases. In a rural community with such a high percentage of people living at or near the poverty rate, any rate increase is unaffordable for many residents. We managed to limit the most recent rate increase to only \$3 a month - for now. However, even with this relatively small rate increase, we are seeing adverse public health impacts. For the last two months, we witnessed approximately double the number of households that could no longer afford to pay their water bills. Our already financially strapped water utility has been forced to develop alternative payment plans for increasing numbers of distressed customers.*

Senator MERKLEY. Thank you very much, Mr. Boone, for bringing that perspective to bear.

Now we will turn to Mr. Robert Simon, who serves as the American Chemistry Council's Vice President of Chemical Products and Technology Division.

We are ready for your statement.

**STATEMENT OF ROBERT J. SIMON, VICE PRESIDENT FOR  
CHEMICAL PRODUCTS AND TECHNOLOGY DIVISION, AMERICAN  
CHEMISTRY COUNCIL**

Mr. SIMON. Thank you, Chairman Merkley, Ranking Member Wicker, and members of the Subcommittee. My name is Robert Simon, and I am testifying today on behalf of the American Chemistry Council. I am here to reinforce our industry's commitment to the safe management of chemicals and also to share information about the use of chrysotile asbestos in the manufacturer of chlorine and caustic soda.

I want to be very clear: Our industry supports the effective regulation of asbestos. One of the things that is worth noting here is that underneath the Toxic Substances Control Act, EPA, the Environmental Protection Agency, has banned the vast majority of uses of asbestos. This is included in 2019 under the newly modernized Toxic Substances Control Act, significant new use rules for an additional 19 categories. So we are making some progress, and some of those restrictions help address the issues that the panel here today has raised.

As part of EPA's ongoing review of all uses of asbestos now underneath the new Toxic Substances Control Act, it is worth noting that they have identified that there are only a very few remaining uses. One of those is the use of asbestos diaphragms in chlor-alkali production.

As an industry, we support the responsible use of chrysotile asbestos for chlor-alkali manufacturing. Chlorine and its co-product are produced through a chemical process using salt, electricity, and water. One of the processes used to help safely process these chemicals is asbestos diaphragms. Think of that as a filter that filters out the various molecules as you are processing the chemical. Today, as you have heard, nearly one-third of chlor-alkali manufacturing relies on asbestos diaphragm technology.

The use of chrysotile asbestos in chlor-alkali manufacturing is highly regulated, as you have heard earlier today. It has been safely and narrowly used in this application for decades. Human exposure is prevented by Federal standards, including required use of personal protective equipment as well as appropriate engineering controls, training, and other regulations. This includes two specific regulations by both EPA for emissions standards as well as OSHA for workplace standards. This also includes end of life issues, so there are strict regulations for how you dispose of asbestos diaphragms at the end of their life.

Finally, the modernized Toxic Substances Control Act is very relevant here. Just several years ago, Congress in a bipartisan fashion enacted the new Toxic Substances Control Act. This significantly enhanced the chemical management laws for our system in the U.S. That law is now being implemented.

Underneath that new law, EPA is currently evaluating asbestos right now. They have completed a risk evaluation; they have a proposed risk management approach that is out for stakeholder comment and review. So the regulatory process is currently already looking at this issue.

I am going to close with some of the socioeconomic considerations that we think are important for this legislation and consideration of any regulation of chlor-alkali manufacturing. Our written testimony provides additional details here. But chlorine and its co-product, caustic soda, are used for hundreds of critical applications that are essential to modern life. This includes, as you have heard today, the support for clean drinking water.

But it is not just that. In addition to not only supplying 98 percent of public drinking water facilities, chlorine chemistry is essential to the manufacture of 88 percent of the top selling pharmaceuticals, both over the counter and prescription drugs. It is responsible for over 89 percent of the top selling crop protection products that are essential for food production.

So it is a critical feedstock chemistry that is used in a lot of important applications, including things that are important for our climate and sustainability objectives.

As I noted earlier, and as some of you have observed, nearly one-third of chlorine manufactured in the U.S. is produced using asbestos diaphragms. And according to the latest market data, U.S. demand for chlorine vastly exceeds the currently supply.

With that in mind, the timeline that is set out in this legislation of 2 years is completely unworkable. As a result of the proposed legislation, you will have placed 33 percent of the total U.S. chlor-alkali production at risk with implications for public health as it relates to drinking water, some of the other applications that I mentioned, and also increasing prices and supply factors for other parts of the economy. And this is particularly relevant for where we are today. We are all familiar with some of the supply chain and inflation issues. But this was borne out recently with the 2001 hurricane and winter storms that we saw in the southeast that reduced 15 percent of chlor-alkali production. And we heard a little bit of that today where that had a real impact on drinking water communities.

So I just urge you, as we consider this legislation, to factor these things in, as it is an important, critical part of the economy. I will conclude with the fact that we are committed to the safety of our workers. We have a strong track record in this regard. But the U.S. should avoid policies that could adversely impact public health, result in shortages, cost increases, and supply chain disruptions of the many critical products that rely on chlorine and caustic soda.

I look forward to answering any questions and appreciate the opportunity to share this information today.

[The prepared statement of Mr. Simon follows:]



**Written Statement of  
Robert J. Simon  
Vice President, Chemical Products and Technology  
American Chemistry Council**

**Before the  
U.S. Senate Committee on Environment and Public Works  
Subcommittee on Chemical Safety, Waste Management, Environmental Justice, and  
Regulatory Oversight  
Regarding: Legislative Hearing on S. 4244  
June 9, 2022**

**American Chemistry Council  
700 2nd Street, N.E.  
Washington, D.C. 20002**

**TESTIMONY OF ROBERT J. SIMON  
ON BEHALF OF THE  
AMERICAN CHEMISTRY COUNCIL**

Chairman Merkley, Ranking Member Wicker, and members of the Subcommittee: My name is Robert J. Simon and I serve as the Vice President for Chemical Products and Technology at the American Chemistry Council (ACC). Prior to my current role, I served as the Managing Director of ACC's Chlorine Chemistry Division.

I am here today to reinforce our industry's commitment to the safe management of chemicals and provide information on the use of chrysotile asbestos in chlor-alkali manufacturing.

As noted in the Environmental Protection Agency's (EPA) recent risk evaluation, commercial uses of asbestos are limited to a very small number of applications of the chrysotile fiber. The most notable of these is in the diaphragms for the production of chlorine and caustic soda. As part of its original rulemaking on asbestos in 1989, the Agency banned asbestos use in a wide variety of applications as well as any new use of any of the fiber types. EPA subsequently issued a significant new use rule (SNUR) covering an additional 19 use categories in 2019.

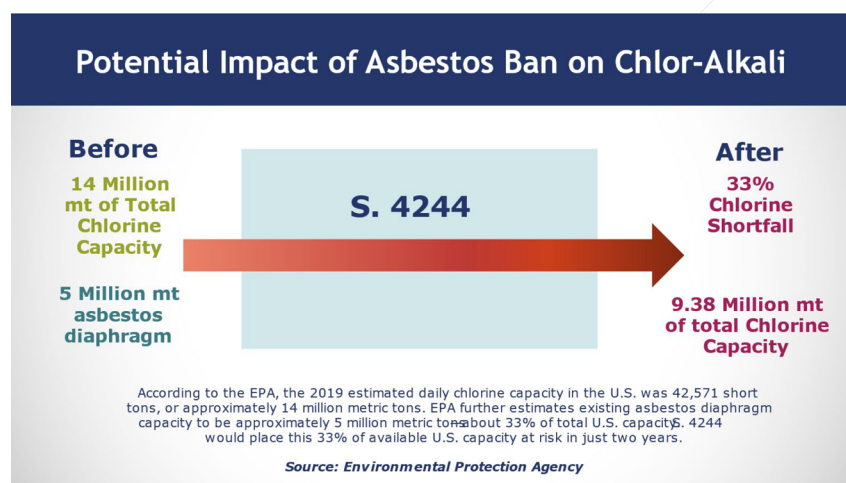
ACC supports the responsible use of chrysotile asbestos for chlor-alkali manufacturing. Chlorine, and its co-product caustic soda, are produced through a chemical reaction using salt, water and electricity. One of the processes to separate the chlorine molecules from sodium hydroxide and hydrogen involves flowing the molecules through a membrane or diaphragm. Today, nearly one-third of the chlorine manufactured in the U.S. is produced using diaphragms containing chrysotile asbestos.

The use of chrysotile asbestos in chlor-alkali manufacturing is highly regulated and has been safely and narrowly used for this purpose for decades. While a variety of regulations generally cover hazard communication, release reporting, and waste management, for the use of chrysotile asbestos in the chlor-alkali industry, the Federal government has issued two specific rules that govern the safety of workers and the protection of the environment. These are the Occupational Safety and Health Administration's (OSHA) Standard for Toxic and Hazardous Substances, Asbestos (29 CFR § 1910.1001) and EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP), National Emission Standard for Asbestos (40 CFR § 61.140). Additionally, the industry follows the procedures set forth by Chlorine Institute Pamphlet 137, "Guidelines: Asbestos Handling for the Chlor-Alkali Industry."

ACC was one of the leading proponents for the Lautenberg Chemical Safety Act, a bipartisan 2016 law that modernized the Toxic Substances Control Act (TSCA). The 2016 amendments reinforced our country's risk-based approach to chemicals management, established enhanced processes for the assessment of new and existing chemicals, and required that EPA have sufficient information to make affirmative regulatory decisions on chemicals in an open and transparent way. EPA is currently evaluating historical and current uses of asbestos under this new law. Our industry has worked constructively with EPA in its evaluation of asbestos use in the chlor-alkali industry. This has included providing significant data and testing information,

coordinating facility tours, and sharing industry's practices for the management and use of chrysotile asbestos in chlor-alkali manufacturing.

According to EPA, the 2019 estimated daily chlorine capacity in the U.S. was 42,571 short tons, or approximately 14 million metric tons annually.<sup>1</sup> EPA further estimates existing asbestos diaphragm capacity to be about 5 million metric tons—about 33% of total U.S. capacity.<sup>2</sup> S. 4244 would place this 33% of available U.S. capacity at risk in just two years. It is simply not workable and would cause economic harm and limit supply to the vast array of products and uses for chlorine chemistry and caustic soda.



Production of chlorine and caustic soda using asbestos diaphragms relies upon closed-system diaphragm cells that separate the chlorine from the sodium hydroxide while remaining contained in the cell. Human exposures are prevented by federal standards including the required use of personal protective equipment (PPE), as well as appropriate engineering controls, maintenance, and rigorous training. Federal regulations also mandate specific requirements for the disposal of spent asbestos diaphragms.

Manufacturers are committed to the safety of our workers. But the U.S. should avoid policy that could result in shortages, cost increases and supply chain disruptions of the many critical products dependent on chlorine and caustic soda. The two-year timetable in S. 4244 resulting in

<sup>1</sup> Economic Analysis of the TSCA Section 6 Proposed Rule for Asbestos Risk Management (Office of Pollution Prevention and Toxics, April 2022), Docket ID No. EPA-HQ-OPPT-2021-0057-0008.

<sup>2</sup> 2016 IHS economics report retained by ACC on the benefits of chlorine chemistry in the U.S. and Canada.

the elimination of one-third of the US chlor-alkali industry within two years of passage is just not reasonable. By contrast, in Canada and the European Union (EU), the governments worked with producers to establish timetables that allow for the continued safe production of chlorine and its co-products during this transition. Canada's ongoing phaseout period is 11 years for a single plant and the EU has provided its industry 25 years.

Chlorine is essential to ensuring access to safe drinking water for millions of American families, lifesaving healthcare and pharmaceutical products, energy resources like solar panels and wind turbines, and much more. Chlorine is also a critical element in the production of products necessary to achieve our climate and sustainability goals.

According to IHS Markit, now Chemical Market Analytics by OPIS, a Dow Jones Company, U.S. demand for chlorine currently exceeds available supply.<sup>3</sup> A two-year prohibition to ban the use of asbestos diaphragms in the chlor-alkali industry, and thus eliminate one-third of chlorine production, could adversely impact public health, contribute to already strained supply chains, and further, increase prices for a wide range of vital consumer goods. In addition to supplying 98% of public drinking water facilities, chlorine chemistry is essential to the manufacture of 88% of the top-selling pharmaceuticals (both over-the-counter medicine and prescription medicine) and 89% of the top-selling crop protection products that are used by U.S. farmers to make food more available and affordable. The reduction in the production of caustic soda would similarly negatively impact the supply of this important chemical. Caustic soda is used in the manufacture of hundreds of consumer products, including aluminum, paper products, adhesives, detergents, pharmaceuticals, food additives, soaps, shampoos, auto parts, phones, fuel cells and disinfectants.

This is particularly relevant today given critical supply chain dynamics in our economy. For evidence of this, we need look no further than shortages caused by the loss of 15% of the chlor-alkali production capacity in 2021 due to Winter Storm Uri, Hurricane Ida and other unplanned events. The result was severe supply shortages, leading several drinking water systems to seek the EPA's assistance to source the chlorine necessary for water treatment.

In response, EPA Administrator Michael Regan highlighted the importance of reliable and sustainable sources of chlorine and the public health dangers a shortage would bring, noting -

*If drinking water systems cannot obtain a sufficient and reliable supply of gaseous chlorine, sodium hypochlorite and calcium hypochlorite [derived from chlorine], they will be unable continue to provide safe drinking water to their communities.<sup>4</sup>*

Administrator Regan further noted -

<sup>3</sup> ACC has retained IHS Markit, now Chemical Market Analytics by OPIS, a Dow Jones Company to analyze U.S. chlorine capacity and associated trends.

<sup>4</sup> Letter from EPA Administrator Michael S. Regan to Chemical Industry Partners, June 30, 2021.

*Similarly, if wastewater systems lack adequate chlorine supplies, they will be unable to disinfect treated wastewater prior to discharge to surface waters, potentially leading to an increase in the concentration of pathogens in the surface water. A loss of drinking water or wastewater services, even for short durations, would have cascading impacts on hospitals, manufacturing, government facilities, private offices and restaurants - essentially all of the critical services necessary to sustain a community.<sup>5</sup>*

Chlorine consumers felt the effects of limited supply acutely from these extreme weather events and more broadly because of the COVID-19 pandemic. In addition, on July 1, chlorine manufacturers will need to incorporate a new excise tax on every ton of chlorine, instituted by the 2021 infrastructure law. It is imperative that any further consideration of proposed, additional regulation in this space consider these important points.

ACC supports effective regulation of asbestos, but for the reasons summarized above opposes S. 4244. This legislation duplicates existing and ongoing federal regulatory processes and would set an unfortunate precedent for legislating risk management actions on substances subject to the amended TSCA bypassing established regulatory authorities. Imposition of a blanket ban on asbestos use without the benefit of information on risk management measures appropriate to conditions of use like chlorine production will lead to misguided policies and will have a negative impact on public health and the economy.

Thank you for the opportunity to provide this testimony, and I look forward to your questions.

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<sup>5</sup> *Id.*



**Senate Committee on Environment and Public Works**  
**Subcommittee on Chemical Safety, Waste Management, Environmental Justice, and**  
**Regulatory Oversight**  
**Hearing Entitled, “A Legislative Hearing on S. 4244, Legislation to Prohibit the**  
**Manufacture, Processing, and Distribution in Commerce of Asbestos.”**  
**June 9, 2022**  
**Questions for the Record for Mr. Robert Simon**

**Chairman Merkley:**

1. Mr. Simon, your testimony states that asbestos diaphragm plants account for 33% of chlorine production. What data supports this statement and what time period does this statement refer to?

*According to EPA, the 2019 estimated daily chlorine capacity in the U.S. was 42,571 short tons, or approximately 14 million metric tons annually. EPA further estimates existing asbestos diaphragm capacity to be about 5 million metric tons—about 33% of total U.S. capacity. EPA’s data is included in its ongoing assessment of chrysotile asbestos under the Toxic Substances Control Act (TSCA). This information is also supported by industry data services including Chemical Market Analytics (CMA) by OPIS, a Dow Jones Company.*

2. Can the American Chemistry Council quantify the total production of chlorine and caustic soda from the eight remaining chlor-alkali plants using asbestos diaphragms?

*According to EPA in its ongoing assessment of chrysotile asbestos under TSCA, the 2019 estimated daily chlorine capacity in the U.S. was 42,571 short tons, or approximately 14 million metric tons annually. EPA further estimates existing asbestos diaphragm capacity to be about 5 million metric tons—about 33% of total U.S. capacity. This information is also supported by industry data services including CMA.*

*Although EPA’s assessment does not provide similar numbers for caustic soda, the current production capacity is about 14.4 million metric tons, of which 4.8 million (33%) is based on asbestos diaphragm technology.*

3. Can the American Chemistry Council provide the number of tons of raw chrysotile asbestos that are stockpiled in the eight remaining chlor-alkali plants using asbestos diaphragms?

*Chlor-alkali producers maintain sufficient supplies for standard operating procedures. Imports of asbestos do not follow a predictable pattern throughout the year. According to the US Geological Survey (USGS), annual imports of chrysotile asbestos have varied considerably in recent years from a high of 681 metric tons in 2018 to a low of 100 metric tons in 2021.*

4. Are you currently aware of asbestos-diaphragm plants that the industry is planning to shut down?

*No. We are not aware of any such information. While the industry has been working to transition to alternative technologies over time, such decisions are company specific and as a trade association we would not be privy to such information.*

5. What specific steps are necessary to shut down asbestos-diaphragm units and replace them with membrane plants and how long does each step take? Please provide the estimated costs for each step in the process.

*Conversions are very complex procedures that require a new facility to be built within an existing plant. Costs will vary depending on the timing and availability of materials and conversions take years to complete.*

*Conversion processes will vary by company and facility, including important considerations of local regulations and permitting processes, as well as other market conditions such as availability of supplies, labor, etc. Finally, any potential timelines need to factor in broader industry and supply chain factors. Given the significant production capacity that still relies on asbestos diaphragm technology, it will not be possible or feasible to convert all facilities at the same time.*

*The steps generally will include construction of a membrane cell room, replacement of electrolyzers, additional brine purification and dichlorination, addition of a caustic soda recirculation system, replacement of transformers and rectifiers, replacement of the caustic soda concentration unit, addition of a salt evaporator, and tank, railcar, and piping upgrades.*

*Information from phase-outs in other countries is available and is being provided to EPA to inform its proposed risk management rule for chrysotile asbestos under TSCA. We would be happy to separately follow-up with the Committee with this information.*

6. Data from US Customs shows that imports of raw asbestos are up over last year and that China is now a significant source of supply. Does the American Chemistry Council understand why this is occurring?

*According to the USGS's report on asbestos, annual imports have ranged from a high of 681 tons in 2018 to a low of 100 tons in 2021, so imports vary considerably from year to year and do not follow a predictable pattern throughout the year. For example, what happens in the first 3 months likely has no bearing on what happens the rest of the year. In addition, there have been discrepancies between the USGS and International Trade Commission (ITC) data over the last 2 years. Contrary to the ITC data, USGS reports no imports from China.*

*As noted by EPA in its assessment under TSCA, diaphragms containing chrysotile asbestos used in the chlor-alkali industry are typically replaced every 1 to 3 years. Due to this replacement schedule, imports of chrysotile asbestos for use in this specific*

*application have historically varied considerably from year-to-year. EPA's Economic Analysis indicates that bulk asbestos imports by the chlor-alkali industry "tend to range between 100 and 800 metric tons during a given year."*

7. What timeline does the American Chemistry Council recommend for shutting down asbestos-diaphragm units under S. 4244 and what is the rationale for this timeline?

*As stated in our testimony, we do not think the shut-down is warranted and such proposals would have a significant impact on the U.S. economy and public health including critical uses like water treatment, crop protection, pharmaceutical manufacture, and building and construction.*

*As noted above, under question 5, any consideration of a potential phase-out needs to take into account the time required to complete the transition to alternative technology as well as the impact on critical supply chains and downstream users including drinking water disinfection.*

**Ex-Officio Ranking Member Capito:**

1. Please elaborate on the protective measures undertaken by chlor-alkali manufacturers using asbestos diaphragms in order to protect workers from asbestos exposure.

*Worker safety is paramount in the management of chrysotile asbestos and nowhere in the chlor-alkali process does a person come into direct contact with dry material while not wearing appropriate personal protective equipment (PPE). As noted in our testimony, there are extensive measures in place to protect worker safety in the chlor-alkali industry. Companies follow the regulatory requirements outlined in the Occupational Safety and Health Administration's (OSHA) Standard for Toxic and Hazardous Substances, Asbestos (29 CFR § 1910.1001) and EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP), National Emission Standard for Asbestos (40 CFR § 61.140), as well as the procedures set forth by Chlorine Institute (CI) Pamphlet 137, "Guidelines: Asbestos Handling for the Chlor-Alkali Industry."*

*The use of asbestos in the chlor-alkali industry is isolated in the production process. This minimizes potential risk for worker exposure. In the chlor-alkali industry, asbestos diaphragms are produced using a wet slurry mix which eliminates the potential for inhalation of asbestos fibers. The diaphragms are then sealed into a closed cell body. During operation, the diaphragms are contained in a continuous wet environment. They remain in the closed process for several years - with no worker exposure. Workers are protected through strict work processes and by wearing individual protective equipment. Given the contained use in a closed, continuously wet environment, the use of asbestos in the chlor-alkali industry is a very different application than the historical uses associated with airborne release of asbestos fibers.*

2. Is it true that there are also protective measures in place in order to protect communities in close proximity to a chlor-alkali facilities and near ports of entry for asbestos shipments? What are some examples and how do they work?

*Chrysotile asbestos arrives in the United States in sealed containers, is stored in controlled areas, processed with dedicated equipment in controlled environments, and disposed of in accordance with federal, state and local requirements. The federal requirements include EPA's asbestos NESHAP (40 CFR § 61.140) in addition to OSHA's asbestos standard (29 CFR § 1910.1001).*

*As noted, the use of asbestos in the chlor-alkali industry is isolated in the production process. This minimizes potential risk for worker exposure and limits any broader potential exposure. Given extensive regulations, workplace standards and the contained use of asbestos within the chlor-alkali production process, there are no exposures outside facility operations for surrounding communities.*

*The chlor-alkali industry has also established and follows the procedures set forth by Chlorine Institute (CI) Pamphlet 137, "Guidelines: Asbestos Handling for the Chlor-Alkali Industry." This includes specific procedures and best practices for the purchasing, distribution, receiving, unloading and storage, which minimize any potential exposure or risk.*

*EPA has acknowledged these protective measures as part of its ongoing assessment of chrysotile asbestos under TSCA.*

3. During the hearing, it was suggested that the Occupational Safety and Health Administration (OSHA) has set an exposure limit for asbestos in chlor-alkali facilities at zero. Is this true?

*Chlor-alkali facilities are regulated by the [OSHA asbestos standard \(29 CFR § 1910.1001\)](#) which includes a permissible exposure limit of 0.1 fibers per cubic centimeter (f/cc) for an 8-hour time weighted average and an excursion limit of 1 f/cc for a 30-minute period. These regulations also include requirements for exposure monitoring, hazard communication and training, access restrictions, and medical surveillance to ensure protection of worker safety. Companies also follow the procedures set forth by CI Pamphlet 137, "Guidelines: Asbestos Handling for the Chlor-Alkali Industry."*

4. Please elaborate further on the exposure limits relevant to chlor-alkali facilities using asbestos diaphragms from OSHA as well as other industrial hygiene organizations.

*A variety of regulations generally cover hazard communication, release reporting, and waste management. For the use of chrysotile asbestos in the chlor-alkali industry, the Federal government has issued two specific rules that govern the safety of workers and*

*the protection of the environment. These are the OSHA asbestos standard (29 CFR § 1910.1001) and EPA's asbestos NESHAP (40 CFR § 61.140). Additionally, companies follow the procedures set forth by CI Pamphlet 137, "Guidelines: Asbestos Handling for the Chlor-Alkali Industry."*

*The OSHA permissible exposure limit of 0.1 f/cc is consistent with the recommendations of the National Institute of Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) and with occupational exposure limits established worldwide.*

5. What findings about the use of asbestos in the chlor-alkali industry did the Environmental Protection Agency (EPA) make during its 1989 rulemaking process?

*Notably, in 1989 EPA recognized that a ban on the use of asbestos in chlorine production was not appropriate given the strong regulation and comprehensive handling procedures applied in the industry.*

*In its 1989 rule on asbestos, EPA determined that exposure to asbestos during the life cycle of this product (asbestos diaphragms used in chlor-alkali production) is limited because the product is generally fabricated on site, used saturated with solution, and is disposed of while wet. Asbestos is not prone to be released into the ambient air during stages after product fabrication. Overall EPA concluded at that time that it did not believe that a ban was appropriate for this product category for the following reasons: (1) insufficient information was available to determine whether suitable product substitutes will soon be available for use in existing chlorine production facilities; (2) the cost of banning this product category would be very high; (3) this product category accounts for only a minuscule portion of U.S. asbestos consumption (less than 1,000 tons in 1985); and (4) a ban on this product category would result in only minimal benefits because asbestos exposure is limited in most life cycle stages, relative to other products analyzed for this rule.<sup>1</sup>*

6. According to EPA's estimates, it will cost \$1.8 billion to convert the remaining eight chlor-alkali facilities to membrane technology. Please elaborate on if you think this number is reasonable and how long you would expect such a conversion to take.

*Potential conversion costs will vary by company and facility, but EPA's cost estimate likely significantly underestimates the cost of conversion. Any consideration of conversion costs needs to factor in the complex process for the planning, permitting and execution of a facility conversion on a site-specific basis.*

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<sup>1</sup> Excerpted from Final Rule, Asbestos; Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, 54 Fed. Reg. 29460, 29500-01 (July 12, 1989).

*The information that EPA used as a basis for its estimate comes from conversions of relatively small capacity European facilities in the early 2000s and does not reflect the current situation in the US. According to CI, there have been no conversions from asbestos diaphragm technology to membrane technology in the U.S.*

*As noted in our testimony and response to other questions for the record, we do not think that a mandatory conversion is warranted. Any potential conversion timeline needs to take into account the various considerations that we have noted in our testimony and response to other questions for the record.*

7. You mentioned the phasedown timelines in other parts of the world during the hearing and in your testimony. Specifically, the European Union provided 25 years and Canada provided 11 years for their phasedowns. Why do you think these countries allowed for these extended timelines and, with these considerations in mind, do you believe the two-year timeline suggested by this legislation is reasonable? Are there any risks to human health from the approaches taken in Europe or Canada?

*As noted, both Canada and the European Union have implemented the planned phase out of asbestos use in the chlor-alkali industry. In both cases, the number of affected facilities is quite a bit smaller than here in the US. In Canada, where there is only one facility using asbestos technology, the designated phase-out period is 11 years. The EU provided 25 years for the phase-out of asbestos technology*

*In both cases, the governments worked with producers to establish timetables that allow for the continued safe production of chlorine and its co-products during the transition. These policies were implemented in a manner to minimize disruptions and provide for a manageable transition to alternative technologies that also avoided disruption to public health and critical downstream uses.*

*It is worth reiterating that in both instances these phase transitions were for only a small percentage of the industry. The proposed legislation would affect a far greater number of facilities and far greater production capacity so this needs to be considered.*

*In reaching its decision, the Canadian Government noted that there is minimal risk to humans from the operation of asbestos diaphragm technology in the chlor-alkali industry, so the extended timeframes deployed in Europe and Canada do not present a risk to human health and the environment.*

8. EPA purports that chlor-alkali facilities converting to membrane technology will benefit from significant cost savings. Do you believe these benefits outweigh the costs of converting a facility to membrane technology?

*It is expected that a conversion to membrane technology will result in a reduction in energy requirements of about 10%. Since at least three of the asbestos facilities use on-site power generation, however, the cost savings resulting from reduced energy demand at these plants would be minimal. There are also questions about the future availability and cost of metals and rare elements required for the membrane cell electrolyzers that may mitigate EPA's estimated cost savings.*

*Potential cost implications will vary by company and by facility. Any potential conversion analysis also needs to take into account the significant capital costs that will be required.*

*Some of the purported costs savings related to potential operational efficiencies and energy uses. However, any potential efficiencies will vary by facility and in some cases, there will be both cost increases and increased use of energy depending on the specific operations at specific facilities*

9. Is it true that there are three primary methods to make chlorine and caustic soda: mercury cell technology; asbestos diaphragm technology; and fluoropolymer membrane technology? What are the risks associated with non-asbestos technologies?

*EPA's recently issued revision to the national emission standards for mercury cell chlor-alkali plants is expected to require that the remaining mercury cell production unit transition to alternative technology or cease operation. Both the diaphragm and membrane technologies include the use of fluoropolymers. While the conversion to membrane or non-asbestos diaphragms may increase the use of fluoropolymers, the use of this material does not present a health risk.*

10. Is it also true regulations promulgated by EPA will or could end the use of mercury cell and asbestos diaphragm technologies? Can you elaborate?

*Recent revisions to the national emission standards for mercury cell facilities are expected to require the phaseout of this process at the one remaining facility. EPA is also currently evaluating the use of asbestos. The Agency's proposed risk management rule for asbestos would require a phase out of asbestos-based technology within 2 years. As part of this process, we will continue to engage with EPA and the regulatory process to inform any potential risk management actions for the industry identified by EPA.*

11. How do production costs associated with these three primary chlor-alkali technologies – asbestos diaphragm, mercury cell, and membrane cell – compare to each other?

*Costs associated with production technology vary by company and facility. As noted in our answer to question 8, the projected cost savings associated with reduced energy usage for a conversion to membrane technology may not be applicable to those facilities generating power on-site.*

12. Do you believe the current market price of chlorine as a commodity reflects currently available chlor-alkali production using asbestos diaphragms? Is that source of production having a moderating impact on prices, compared to more expensive production methods?

*As I indicated in my written testimony, the reduction in production of chlorine and caustic soda resulting from recent natural events has had a significant impact on the market price of these materials. The expected closure of the remaining mercury cell facility will likely add to decreased supply and increased costs.*

*While asbestos diaphragm units compose about one-third of the total capacity of chlorine production, Chemical Market Analytics estimates that they supply one half of the chlorine available to the commercial market. As a result, the loss of capacity based on asbestos diaphragms could have an outsized impact on the commodity market.*

*In regards to caustic soda, EPA has suggested that the higher purity material produced by the membrane technology may allow manufacturers to command a higher price. It is not clear, however, whether downstream users require the higher purity and would be willing to pay more for the material.*

13. Is it logical to assume that once chlor-alkali facilities using asbestos diaphragms are no longer permitted to operate by EPA that the commodity price for chlorine and other caustic soda derivatives will rise? Is there a futures market for these commodities or their derivatives that would indicate when and how these anticipated increases will be “priced in”?

*It is also important to consider that not all plants will necessarily be converted or shutdown so this could have additional economic impacts. These will be company and market specific determinations which could have an influence on overall prices and supply.*

*As a trade association, ACC does not engage in projecting future prices or markets. EPA has suggested that demand for chlorine and caustic and derivatives can be met with an increase in imports. It is not clear that excess global production capacity exists, however, to meet the loss of US production.*

14. In addition to the capital expenditure costs associated with retrofitting a chlor-alkali facility using asbestos diaphragms to a different production method, are there other costs and/or concerns that could further drive up the market price for chlorine, such as permitting issues or other regulatory uncertainty?

*The permitting process for a major construction project like retrofitting an asbestos facility can take as long as 18 to 24 months and can create significant challenges for construction.*



*In addition to the capital required for construction, there are also significant concerns about the availability of the required equipment. For example, recent supply chain disruptions have placed significant pressures on manufacturers of electrolyzers, essential to the transition to membrane technology. Just last month, the Biden Administration issued a formal determination under the Defense Production Act regarding the production of electrolyzers which are also critical to hydrogen production for clean energy applications.*

15. Can you compare the number and the production volume averages of facilities using diaphragm technology compared to those using asbestos diaphragms? How much domestic production capacity is represented by the remaining facilities using asbestos diaphragms?

*There are eight facilities using asbestos diaphragms to product chlorine and caustic soda. (A ninth facility is in the process of transitioning to an alternative technology.) As noted in our response to questions 1 and 2, facilities using asbestos diaphragms comprise about one third of the domestic production capacity for chlorine and caustic soda. As noted in EPA's economic analysis, these facilities range in production capacity from 170 to 1227 thousand metric tons of chlorine annually.*

16. If domestic capacity provided by asbestos diaphragms is brought offline by this legislation or EPA regulation, do you anticipate that public water systems will encounter shortages of chlorine and higher prices?

*We have already seen shortages and higher prices in the water treatment application resulting from the 15% drop in supply over the last couple of years due to impacts of Winter Storm Uri, Hurricane Ida, and other unplanned events. The shortages prompted EPA Administrator Regan to write a letter to chlor-alkali manufacturers in June of 2021 expressing the importance of chlorine and chlorine derivatives to water treatment.*

*It is reasonable to expect that the reduction in production capacity resulting from EPA's proposed rule would result in significant shortages and price increases for public water and water treatment systems.*

17. Is the United States able to import chlorine in sufficient amounts to make up for this lost production capacity? If not, why not?

*Excess global capacity for the production of chlorine and caustic soda and their derivatives is limited and not sufficient to fill the demand that would result from the shutdown of asbestos diaphragm units. Only Canada and Mexico supply the US with elemental chlorine, because of the challenges of trading elemental chlorine intercontinentally. Canada and Mexico currently lack spare capacity to increase chlorine exports to the US. Canada's chlor-alkali operating rates are near maximum, and Mexico is limited by railcars.*

How much chlorine has been imported into the United States this year compared to a comparable timeframe in 2021?

*According to CMA, 263,000 metric tons of elemental chlorine were imported from Canada and Mexico in 2021.*

Collectively how much asbestos do chlor-alkali facilities use as an input in a typical year and has this amount changed in recent years?

*This varies by company and facility based on a variety of factors including production, size of facility, etc. As noted by EPA in its ongoing assessment under TSCA, diaphragms containing chrysotile asbestos used in the chlor-alkali industry are typically replaced every 1 to 3 years. Due to this replacement schedule, imports of chrysotile asbestos for use in this specific application have historically varied considerably from year-to-year. EPA's Economic Analysis indicates that bulk asbestos imports by the chlor-alkali industry "tend to range between 100 and 800 metric tons during a given year."*

18. What are the differences between the captive and merchant markets for chlorine?

*Captive consumption is defined as the amount of any chemical that is used and produced by the same facility. Merchant market is any chemical quantity that is metered and commercially transferred from its production facility to a buyer.*

*CMA estimates that about 32% of chlorine production is sold on the merchant market; the remaining 68% is expected to be captive. As noted previously, about one-half of the chlorine available to the merchant market is produced with asbestos diaphragms.*

19. Would you say that the remaining chlor-alkali facilities using asbestos diaphragms participate, for the most part, in the captive market or the merchant market?

*According to CMA, 50% of the merchant market currently relies on asbestos diaphragm technology.*

20. When water systems purchase chlorine, is it coming from the merchant or captive market?

*All elemental chlorine purchased by water systems comes from the merchant market. Elemental chlorine is defined as chlorine consumed for direct elemental chlorination in municipal water treatment facilities for potable water and wastewater treatment.*

21. Is it accurate to claim that shortages in the merchant market for chlorine can be made up by pulling from the captive market? If not, why not?

*It is not possible. First, the majority of facilities that produce chlorine for captive markets are not designed to package and transport chlorine for other markets. These facilities*

*produce and use the chlorine for internal processes in the manufacture of other products on site so this chlorine would not likely be available for the merchant market. Even if such production was available many of these facilities lack the necessary technology, resources, and distribution capabilities to do so. Additionally, this would be costly and not increase capacity to replace supply to meet other uses.*

22. Is it true that the majority of chlorine used for polyvinyl chloride (PVC) is constituted by the captive market and would therefore not be available for other manufacturing channels?

*Yes. As noted above in question 21, these facilities are also generally not equipped for the distribution or sale to merchant markets.*

23. Since PVC pipes are widely used by public water systems to facilitate clean drinking water infrastructure projects, would anticipated price increases for PVC impact their ability to make capital investments and, in turn, diminish the impact of federal investments in water infrastructure such that the Infrastructure Investment and Jobs Act (IIJA) provides?

*There is a potential for economic impact to a wide range of critical downstream uses which includes PVC pipe. An important consideration here is also the significant capital costs that will be required to implement a transition and which will need to be capitalized over time with implications for decisions regarding production, supply and price.*

24. This legislation would significantly expand the definition of asbestos under the Toxic Substances Control Act (TSCA). Are you concerned by this expanded definition? If so, why?

*The chlor-alkali industry only utilizes chrysotile asbestos. We would encourage the Committee to consult with other stakeholders and potentially affected entities in the regulated community about the proposed definition in the legislation.*

25. Are you aware of, and if so please detail, any concerns that ACC or other entities in the industry may have about the following language from section 2(2)(B):

*“(B) IMPURITIES. —Nothing in this subsection applies to any chemical substance, mixture, or article in which commercial asbestos is present solely as an impurity”*

*We generally support provisions that recognize the inapplicability of policies like these to impurities or unintentionally added substances, we would encourage the Committee to check with other interested stakeholders and affected industries about these provisions.*

26. The legislation appears to leave it up to the discretion of the EPA to determine whether or not asbestos within a product is considered an impurity or an ingredient. If this expansion

of the EPA's authority were to become law, do you envision a scenario where manufacturers and processors of asbestos would have to conduct additional compliance testing on products before they are able to enter the market? Since manufacturing supply chains are complex and multinational, is it even possible for end users of asbestos to comply with this requirement?

*ACC recently submitted comments on EPA's proposed reporting and recordkeeping requirements for asbestos in which we discuss the significant challenges in complying with a requirement to determine whether asbestos is present as an impurity. To the extent that EPA chooses to require reporting the presence of asbestos as an impurity, we encouraged the Agency to adopt a de minimis reporting threshold of 1 percent. This is consistent with the definition of "asbestos-containing material" in Title III of TSCA, EPA's asbestos NESHAP, and the OSHA asbestos standard and would significantly reduce the reporting burden.*

Senator MERKLEY. Thank you very much, Mr. Simon.

Now we will turn to questions from our Senators. I will start off.

Mr. Simon, you mentioned the role of EPA in restricting and considering the uses of asbestos. The EPA acted in 1989 to ban asbestos, and it was thrown out in the courts in 1991.

Is it significantly possible, then, that any action the EPA might take now might also be thrown out by the courts in the future?

Mr. SIMON. Thank you, Senator. I can't necessarily speak to that. I think the legal proceedings will be what they are.

What we would say is that underneath the new Toxic Substances Control Act, which was just enacted by Congress several years ago, it has dramatically changed the process. For example, the risk evaluation process is very different than underneath the old TSCA.

So I think some of those important changes that have been made to the underlying statute would serve us well here. And we support those.

Senator MERKLEY. I will note that the process is new. It is relatively untested. It has all sorts of new complexities. I am sure that just as in the past, folks have challenged the action of the EPA as they do on virtually everything the EPA does, we can see that in the future. So EPA has certainly no significant guarantee of any restriction on asbestos.

Mr. Boone, you mentioned concern about the cost. We have seen over the last two decades, and we saw it in the chart that Ms. Reinstein put forward, significant replacement of manufacturing with asbestos to make chlorine, with manufacturing not using asbestos. Is there any indication that the chlorine gas that is produced with cell membrane, non-asbestos cell membrane, is more expensive than the chlorine gas that is purchased from asbestos diaphragm manufacturing?

Mr. BOONE. Mr. Chairman, I do not know how chlorine is made. And we don't know the chlorine that we purchase, whether it is made with the membrane or with the asbestos. We have no idea. We just know about the availability and the cost of it throughout the industry.

So we are seeing that that supply has decreased, and the cost has increased throughout the entire industry.

Senator MERKLEY. Thank you very much. Mr. Simon explained that the storm that damaged the manufacturer had that impact.

But indeed, if the chlorine gas was more expensive, then the industry would not have converted over to that, because they wouldn't have been able to sell their chlorine gas. So I will just provide the answer for the benefit as, it is not more expensive. It is a commodity. And the industry has been moving toward, on its own, for its own economic reasons, moving away from the asbestos diaphragms to the non-asbestos cell membrane.

Ms. Reinstein, simple question. How big a risk does asbestos pose to the public?

Ms. REINSTEIN. To be clear, there is no safe level, as Dr. Whu has been talking about. What we are seeing now is cross-contamination and lots of misinformation. So with legacy asbestos in homes, schools, and buildings, and products coming in from overseas and elsewhere, asbestos remains a huge risk.

I think we also have to identify the fact that there are many pathways of exposure. It is not just engineering controlled chlor-alkali plants. There are many people in fence line communities that unload from the dock, work with it being distributed to the plants, also disposal. We have to look holistically at the entire ripple of asbestos that impacts Americans.

Senator MERKLEY. And the way to look at it holistically is to say let's quit importing it, like 60+ major developed nations have done.

Ms. REINSTEIN. Chairman Merkley, that is so true. That is what the United Nations ILO and WHO say, the way to eliminate diseases is to stop using asbestos, which is what your bill would do.

Senator MERKLEY. Ok. Thank you. Ms. Reinstein, as noted, the EPA has proposed a rule under the Toxic Substances Control Act, under TSCA, to address the conditions and the use of chrysotile asbestos. Do you believe that that TSCA process will produce a comprehensive ban on asbestos?

Ms. REINSTEIN. I want to applaud the EPA for all the hard work. We fought very hard to get the Lautenberg bill passed about 6 years ago. It is deeply disappointing to know that we are looking at the health risks and management for one fiber, and they only determined that six conditions of use pose a risk.

We should be looking a ban from the EPA. Instead, we got a Band-Aid. We need all six chemicals banned. I know the EPA's hard work will probably sadly be challenged in court. I have attended many different webinars, and I can tell you that the industry is already setting up to sue. It will be highly litigated. The rule will come out probably next year, and then we will spend 2 to 3 years in court arguing why the EPA's Part 1 is not legal.

Senator MERKLEY. So, a very complicated process, subject to court challenges. We have been at this since 1989, and EPA has failed us now for 3+ decades. So no guarantee that it will succeed this time around.

Ms. REINSTEIN. Yes, I think that is very true. I also think the EPA gave us a gift, too. The economic analysis is excellent. It discloses exactly who is importing, where the plants are, and about the safer substitutes that exist that are economically viable. But it also talks about a 2 year plan which is yes, very robust. But truthfully, I did research this weekend, when Bob and I were working. The industry has been talking about transitioning for almost 50 years, and I have the documents. This is not a new chlorine institute problem. This is old. We need to embrace innovative business technology to truly get to know asbestos.

Senator MERKLEY. I know that you have been immersed in this issue for a long time. And I posed the question earlier, as industry transitioned, did the chlorine gases sold from the new plants that used cell membranes rather than asbestos diaphragms cost more to customers than the old product?

Ms. REINSTEIN. I can't really speak to the cost. That is not my area of expertise. But I can tell you that if there was a problem with the asbestos diaphragm plants that they were reducing 800 tons of chlorine on this last year, they wouldn't have done it. So I believe that it is economically viable to, yes, use the membrane technology, and they will be enhancing public health by coming to

the stakeholder table to work with you and your colleagues to move this bill forward, come up with a reasonable plan.

Senator MERKLEY. Good. I will just note that as Mr. Simon testified, now two-thirds of the production is done by the new cell membrane. They sell it because it sells at the same price. It is a commodity.

Dr. Whu, as a doctor, can you speak to how asbestos damages the human body?

Dr. WHU. Yes, sir. The fibers will be inhaled. And then they will travel into the pulmonary system. That is just one of the ways that medical evidence suggests asbestos fibers cause disease. In there, they will hurt the lining of the lungs, the mesothelium, and then through the latency period, which has been recorded to be anywhere from 10 to 50 years, you will develop asbestos induced mesothelioma, lung cancers, cancers through all the other parts of the body, and if not cancers, other diseases.

Senator MERKLEY. As I started to have folks educate me about this, what I had not realized until I was involved in this bill, and I will describe this, and see if I have this correct. You can set it straight for the record. With asbestos, it is not a chemical interaction, like a poison, if you will, but in fact the fibers are very short, very stiff, very pointy. And they pierce the cell membranes and start doing all sorts of destruction as they move through the body.

Is that a fair way for me to describe it?

Dr. WHU. Yes, sir. It is a mechanical insult because of the shape of the fibers that you described. So being microns in size, they travel all the way down into the bottom of all of our organs and lungs, mainly, as we speak to here. And then the shape of those fibers, the sharp edges, produce a mechanical insult. Because they are so small, you can breathe a lot of them, especially with repeated exposures. And then you compound the problem, because you are having more and more of those fibers travel down into your lungs and continuing to worsen the damage.

Senator MERKLEY. So in a situation like 9/11, when there was legacy asbestos from the building materials in the air, could fire fighters have breathed in hundreds or thousands of fibers in a short period of time?

Dr. WHU. I wouldn't preface it with the word could. We did. So the Towers was the largest asbestos job in the world. And Tower One, the north tower, was coated with asbestos for the first 40 floors before the builders realized, we know where this is going, let's stop now. So they looked ahead, and they said, rather than to deal with a lawsuit of 220 floors, every tower was 110 floors of asbestos, they stopped at 40 floors. They abated it in place.

So they deemed it safe because it was abated. But then 9/11 happened. So everything came down. An estimate of 400,000 tons of asbestos were released, pulverized, aerosolized, only to be breathed by the people that were there.

Senator MERKLEY. This damage that you are describing as the short, pointy fibers move through the body attacking and damaging one cell after another, are these diseases slow moving, painful, difficult, horrendous?

Dr. WHU. Yes, sir. If you figure, let's talk about lung cancer and mesothelioma, the latency of it being 10 to 50 years. If I had to put it in laymen's terms, imagine somebody starting to choke you, and finally kill you after 10 to 50 years of choking you. So there is a decrease in quality of life. It is not just the end of life that we are talking about.

So toward the end of that point, people are having severely diminished quality of life. Basically, you stop living many years before you actually die. So you see people that are walking around with oxygen concentrators. Imagine that, and increase it exponentially. Because that is the damage that asbestos will cause. Once it starts hurting the lungs, the lungs can no longer expand, there can no longer be the appropriate gas exchange. Then that is the choking that I am talking about.

Senator MERKLEY. Thank you.

We are now joined by Senator Carper.

Senator CARPER. Thank you, Mr. Chairman.

Welcome. We have a lot of hearings going on today. I am sorry that we are in and out. Thank you for holding this important hearing and for your passion and commitment on this issue.

I want to thank each of our witnesses not just for being here with us but also for taking the time to discuss these issues and better inform us as we go about our day jobs.

I would like to ask a little bit about the health effects of asbestos exposure. Senator Susan Collins, a Republican from Maine, as you know, and I are co-sponsoring something called the Federal Fire Fighter Fairness Act of 2021. There are a lot of caucuses, as you may know, in the House and the Senate, and as the Chairman knows, a lot of caucuses that deal with all kinds of issues, maybe defense issues, maybe agricultural issues, maybe environmental issues.

One of the largest caucuses is the Congressional Fire Services Caucus. A great majority of House and Senate, Democrats and Republicans, are members of that caucus. And Senator Collins and I are the co-chairs of that caucus.

We are also the co-sponsors of the Federal Fire Fighter Fairness Act of 2021, which would create a presumption that a disability or death of a Federal fire fighter caused by certain diseases is the result of the performance of their duties. I will say that again. Co-sponsoring legislation, Federal Fire Fighter Fairness Act of 2021, which would create a presumption that a disability or death of a Federal fire fighter caused by certain diseases is the result of the performance of their duties.

Among fire fighters, duties that involve increased risk of exposure to asbestos which pose health risks are well documented. I have a question of Dr. Whu. Would EPA's proposed Part 1 asbestos rule address health risks to fire fighters? I will say that again. Would EPA's proposed Part 1 asbestos rule address health risks to fire fighters? If not, what more needs to be done to address asbestos risks to our Federal fire fighters?

Dr. WHU. Thank you, Senator Carper. First of all, let me start by thanking you and Senator Collins for championing and supporting the Federal Fire Fighters Support Act. Because, as you know, there is presumptive legislation in 49 out of 50 States for



this disease and cancers that fire fighters get that are now known to be occupationally acquired. The Federal Government, sadly, does not have that presumption. And you and Senator Collins are trying to change that. For that, we thank you.

Right now, as it stands, Federal fire fighters have an impossible burden of proof. They have to prove, in order to get their earned workers compensation, which fires they went to throughout their entire careers that gave them the cancer that they are seeking benefits for. That is impossible, as somebody that was there for 30 years, I have been to one, I have been to 1,000. How do you tell me, pick the one where you got sick? Other than 9/11, I can't tell you with proof positive to any other emergency scene that I have been at that had asbestos. But I am sure there was.

So as to the EPA, I am not familiar with what they propose. But I am familiar with what they are doing now. Currently they are focusing their efforts on regulation that only deals with current uses of asbestos. That is great. If I can put it in fire fighter lingo, that is great to prevent the progression of a fire. But it does nothing to address the fire that is already there. That is legacy asbestos.

So what we need the EPA to do, and again, Chairman and Senator, we thank you, we need them to address legacy uses of asbestos. If you look at their charge, they are required to do that by law.

Senator CARPER. Thank you, Doctor. Following up with a related question, part 2 of EPA's risk evaluation for asbestos will include, I am told, among other things, a description of legacy uses and methods of disposal of asbestos and an evaluation of the risks posed by other types of asbestos fibers, in addition to a word I can barely pronounce, chrysotile. EPA must publish its final part 2 risk evaluation by December 1st, 2024. So it will be another 2 and a half years until we have this risk evaluation completed. Then EPA must act according to the results of that evaluation.

My question is, Dr. Whu, how will this timeline impact public health and the health of our fire fighters and other emergency responders who will continue to be exposed to these other asbestos fibers in the intervening years?

Dr. WHU. So how it would affect fire fighters, we would continue to be exposed to a proven, known carcinogen that is proven to kill. How would it affect the rest of Americans? At a rate of 40,000 American lives lost per year, in 2 and a half years, for them to get the results of their report, we will have buried 100,000 Americans.

So anything short of banning it is a Band-Aid. We need to ban it because medical evidence has already proven that asbestos is deadly. There are other ways to accomplish the things that the industry needs to accomplish. This is America. We have done it throughout our history. We are great innovators. Why continue to use something that kills fellow Americans when we can just put our heads together and come up with something that still accomplishes their needs and still provides for all Americans and yet saves 40,000 American lives every year and countless fire fighters that suffer many years before going into their deaths?

Senator CARPER. All right. Thank you, sir.

Mr. Chairman, if I could, could I ask one more question?

Senator MERKLEY. Absolutely. We have plenty of time for as many questions as you would like.

Senator CARPER. That is great. Then we will break for lunch, is that it?

Senator MERKLEY. Something like that.

[Laughter.]

Senator CARPER. Ms. Reinstein, when my staff told me you were going to be here, I thought they said Linda Ronstadt, who I met when she was 20 years old, fronting a group called the Stone Ponies with a big hit record called You and I Travel to the Beat of a Different Drum. I would later meet her 30 years later at the Grand Opera House in Wilmington, Delaware. She had no recollection of meeting me when I was like 21 years old.

But I will call you by your correct name, Linda Reinstein, right?

Ms. REINSTEIN. Reinstein.

Senator CARPER. Reinstein. Thank you. I am glad I asked.

My question, Linda, would be, EPA appears at long last to have initiated a robust and comprehensive two part strategy to define and address the public health risks associated with several forms of asbestos. Could you help us understand why it is still important to legislate a ban on the manufacture, import, and use of asbestos in this country?

Ms. REINSTEIN. I am happy to answer your question, Chairman Carper. First, the American people cannot do product testing to find out if product A is contaminated with asbestos. We need to have a full EPA ban on all six fibers to protect public health. And it is fair to consumers.

Two, the EPA's six conditions of use is just ridiculous. I know they have worked very hard; we have put a lot of comments into the docket. So it is not of their fault. But we have talked about other products that have come in that are contaminated. We were unable, even their SAT committee were unable to broaden the scope.

I don't fault them. This has been a daunting task. But we need a full evaluation of the risks.

Last, this is going to be litigated again. I am 66 and a half. I am not getting younger. And the reality is, if the EPA, when and if they would pass their proposed rule, it is probably another 2 years, then it will be litigated. Let's look at the calendar here. I would be over 70 years old. How many more deaths, like Dr. Whu said, will happen? We don't need the imports.

Worse yet, the EPA can't manage asbestos right now in the structures that they are required to investigate. So if we can't manage the risk that is in place, tell me why we are allowing one industry, the chlor-alkali industry, to import hundreds of tons for asbestos diaphragms? It doesn't make good business sense or public health sense when safer substitutes exist.

Last, I think it is important to look at the patient and the family. These diseases can cost upwards of a million dollars. We call it death by a thousand cuts. The patient can't breathe, they can no longer work, they feel like they are a burden to their family, they have to go on government assistance many times. And why? These diseases are all preventable.

As Dr. Raja Flores says, at the Mount Sinai Medical Center, you can do more with your pen than he can do with his scalpel.

Senator CARPER. Correct me if I am wrong, Mr. Chairman, but I understand that for you, this issue is not just esoteric, it is not a theoretical issue. For you and your family, this is deeply personal. We appreciate your years of commitment and work in this regard. Thank you, and thanks for joining us today. Very nice to meet you.

Ms. REINSTEIN. Thank you, Chairman.

Senator MERKLEY. Thank you very much, Chairman Carper.

We will now turn to Senator Markey.

Senator MARKEY. Thank you so much, Mr. Chairman.

I agree with Senator Carper. We have to ban all types of asbestos. It just makes no sense that we are not going to do that. We have to catch up to the rest of the world on this. It is just so important. We are making some progress at the EPA, but we just have to move so much faster than we have.

My staff director in Boston in the 1980s, Joe Zampitella, his father Joe Zampitella, Sr., was the President of the Asbestos Workers of Massachusetts. Joe Zampitella, Sr., passed away from his exposure to asbestos in 1985. I will never forget all those asbestos workers who were at that funeral, all of them having been exposed without any real protection, without any real understanding of what they were doing to themselves and then to their families.

It still claims tens of thousands of Americans each year. And I think it is important for us to ban all of it. We have to move forward.

Ms. Reinstein, I have known you for years. I am grateful for your longstanding advocacy and partnership on this issue. And I thank you for being a fighter for all the families out there who have been experiencing the grief and crisis due to asbestos exposure.

Dr. Whu, do you agree that it is important for the health of fire fighters and other populations to address the legacy issues and disposal of all types of asbestos?

Dr. WHU. In a word, Senator, yes.

Senator MARKEY. Thank you.

Dr. WHU. A little bit of expansion, it is asbestos; it is a killer; it is already here. So again, if you have a fire and you are able to prevent its further spread, that is great. We expose the forward progression. But now we have to go back and address what is already there.

So after we stop the forward progression, stopping it would be the next step to take.

Senator MARKEY. And I want to focus on the chlor-alkali industry. You mentioned it, Mrs. Reinstein, this is the sole importer of raw asbestos into the United States. This industry is advocating for the continued use of asbestos in order to make chlorine and other chemicals.

But we don't need asbestos to make chlorine. Most companies and most of the world have moved on to non-asbestos technologies and instead found a way to be innovative and produce chlorine without asbestos. Besides, for the three remaining companies that do use the asbestos process, they have been permanently shutting plants because they aren't cost effective.

Mrs. Reinstein, the industry has known about this problem for decades. There was a big discussion about it as we were passing

the Toxics bill back in 2016. Some companies have transitioned to safer technologies. Other countries have moved on without economic harm.

So what possible justification is there for continuing to use these asbestos based techniques?

Ms. REINSTEIN. That is the million-dollar question. To us it makes no sense. I believe what they are attempting to do is just delay the inevitable. They know safer substitutes do exist. They are unable to import the right fiber type to use in the industry, and it is shown to import asbestos.

I think it is important to also look at what does the business climate look like for the chlor-alkali industry. The research that we did this weekend determined that about 800 tons of chlor-alkali was reduced or ended because of economic reasons from Olin and Occidental. So they understand the handwriting is on the wall. The real question is, how much asbestos have they stockpiled, how long will it take them to go through it, and what do they really need to transition. Because I think with the leadership of Chairman Merkley and yourself and the other members of this Committee, we could have a roundtable discussion and speak robustly.

In Chelsea, Massachusetts, there was a dump outside in the public area from legacy asbestos. If we can't manage the risk of what is in legacy, why are we still allowing imports?

Senator MARKEY. Yes, and that was just last month that a pile of asbestos contaminated concrete was dumped along the road in Chelsea, Massachusetts, about 2 miles from my house. That asbestos can easily enter the air and travel into those homes over such short distances. It enters our lives through more direct means, too, including through commercial uses and building materials. It is all still out there.

So Mrs. Reinstein, the chemical industry sometimes points to PFAS as a reason not to transition away from asbestos technologies since the alternative technologies, which account for more than 80 percent of chlorine production worldwide, can include PFAS compounds. But isn't that a false narrative, since the asbestos methods use PFAS compounds themselves?

Ms. REINSTEIN. That is a very good question. There are two points to that. One, about 75 percent of the existing chlor-alkali plants do use membrane technology, which means there would be an element of PFAS. We know there is about 9,000 polymers. And the EPA has already come out with a statement saying that the transition from asbestos to membrane technology is the recommended thing to do. And they actually have in their economic analysis described that it will be safer to transition from asbestos to membrane technology.

So I am sorry to say that is just another smokescreen that is being used. It is not factual. If they are really concerned, and they talk about PFAS, then they need to look at the other 75 percent of their plants.

Senator MARKEY. Thank you.

May I continue? I will just finish up then.

Senator MERKLEY. Yes, if you could finish up. Thank you.

Senator MARKEY. By pointing PFAS fingers at other industries while using PFAS themselves, these asbestos addicted corporations

are throwing stones in a glass house. And in the meantime, more innocent bystanders are getting hurt or killed by this toxic product.

As you know, because of you, Senator Boxer and I put a hold on that bill back in 2015 and 2016, to get the strongest possible asbestos protections we could at that time. But there is still more work to be done.

I thank you, Senator Merkley, for your leadership, so that we finish the job. Thank you.

Senator MERKLEY. Thank you very much, Senator Markey.

Now we will turn to Senator Wicker.

Senator WICKER. Thank you, Mr. Chairman. I appreciate it.

Let me direct my first question to Mr. Boone. Thank you for being here, and also thank you for what you do for the Copiah Water Association. Just so members will know, citizens in small and rural communities up and down the State of Mississippi and across from the Alabama line to Louisiana and Arkansas get their water in large portion from community water associations. So Mr. Boone, you are representative of so many people.

What would this legislation do to your ability to have chlorine to purify the water? And what would it do to the rates that your members would pay?

Mr. BOONE. Senator Wicker, Mr. Simon has already pointed out that the demand for chlorine exceeds the supply. Any legislation that would hurt that would be detrimental to the safety of the citizens or those consumers on water associations.

Chlorine gas is by far the most effective disinfection that we have. And any cause that would have us not be able to get it, or a price increase, would be detrimental to many, many water associations and their customers.

Senator WICKER. Is there an easy source to switch to? Could you just switch to something else?

Mr. BOONE. No, sir. There are other ways of disinfecting water, but again, those are very cost prohibitive and nowhere near as effective as gas chlorine. We have what is called a residual that carries throughout the entire system. Chlorine gas is by far the most effective to carry that residual to do its job to disinfect the water through many miles of pipe, through tanks, all the way to the end of the system, to ensure that our customers are receiving safe and clean water.

Senator WICKER. You wouldn't provide water that didn't have that necessary tiny bit of chlorine?

Mr. BOONE. No, sir.

Senator WICKER. Do you have any information whatever that the asbestos diaphragm filter is at all harmful to water?

Mr. BOONE. No, we do not.

Senator WICKER. OK. Mr. Simon, well first, Mr. Chairman, let me submit at this point, I ask unanimous consent to submit into the record three letters that further detail the issue that water utilities and other industries would face if the supply of chlorine were constrained. One letter is from the National Association of Clean Water Agencies representing public wastewater agencies of all sizes. Another is from the American Water Works Association and the American Association of Metropolitan Water Agencies, representing drinking water systems that collectively serve over 80

percent of the country. The third letter is from the U.S. Chamber of Commerce.

Senator MERKLEY. Without objection.

[The referenced information follows:]



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[www.nacwa.org](http://www.nacwa.org)

June 8, 2022

The Honorable Jeff Merkley  
 Chairman  
 Subcommittee on Chemical  
 Safety, Waste Management,  
 Environmental Justice, and  
 Regulatory Oversight  
 U.S. Senate Committee on  
 Environment and Public Works  
 Washington, D.C.

The Honorable Roger Wicker  
 Ranking Member  
 Subcommittee on Chemical  
 Safety, Waste Management,  
 Environmental Justice, and  
 Regulatory Oversight  
 U.S. Senate Committee on  
 Environment and Public Works  
 Washington, D.C.

Dear Chairman Merkley and Ranking Member Wicker:

On behalf of the National Association of Clean Water Agencies (NACWA) and our 350 public wastewater and stormwater utility members nationwide, both large and small, we appreciate the opportunity to provide a statement for the committee's June 9, 2022 legislative hearing entitled *S. 4244, Legislation to Prohibit the Manufacture, Processing, and Distribution in Commerce of Asbestos*.

NACWA does not have an official position on S. 4244 at this time. NACWA also fully appreciates the significant public health and environmental concerns presented by asbestos products. However, NACWA is providing this statement to inform the Committee of potential significant unintended consequences of this legislation on publicly owned treatment works (POTWs) that work every day to provide public health and environmental protection to their communities and local waterways.

For many POTWs across the country, chlorine and sodium hypochlorite remain the most effective method for wastewater disinfection. Approximately 30 percent of the chlorine and sodium hypochlorite supply in the U.S. is manufactured using asbestos technology. Since changing to other manufacturing technologies will cost \$1.8 billion dollars, according to the U.S. Environmental Protection Agency (EPA), a sudden prohibition of the use of asbestos technologies will almost certainly cause shortages and further price increases for chlorine and sodium hypochlorite.

NACWA Statement re: June 9, 2022 Legislative Hearing Entitled *S. 4244, Legislation to Prohibit the Manufacture, Processing, and Distribution in Commerce of Asbestos*  
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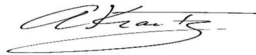
For POTWs, cost increases in chlorine and sodium hypochlorite will be passed on to their ratepayers and may cause other vital maintenance and investment in infrastructure to be deferred. Switching from chlorine or sodium hypochlorite to other disinfection methods in a short period of time is not a realistic alternative for most POTWs due to costs or technical considerations.

In addition to the cost increases, this legislation could also create significant supply chain disruptions for utilities seeking the vital chemicals needed for water and wastewater treatment processes. These vital chemicals are already difficult to obtain due to ongoing stressors to the supply chain. Such a disruption would lead to environmental and public health impacts that would outweigh the problem this legislation seeks to solve in the first place.

To protect public health, the environment, and the nation's water infrastructure, any changes to the chlorine supply must be carefully considered and gradual, to allow supplies and costs to remain constant for utilities and allow other potential methods of disinfection to be evaluated and possibly utilized.

NACWA appreciates your consideration of these comments and the impacts current legislation could have on the operations of POTWs, their ratepayers, and the constituents you serve. We all share a goal of protecting the health and safety of the communities we serve and welcome further discussions with the Committee on this issue.

Sincerely,

A handwritten signature in black ink, appearing to read "Adam Krantz", with a horizontal line extending from the end of the signature.

Adam Krantz





June 7, 2022

The Honorable Jeff Merkley  
Chairman  
Subcommittee on Chemical Safety, Waste  
Management, Environmental Justice, and  
Regulatory Oversight  
Committee on Environment and Public Works  
United States Senate  
Washington, DC 20510

The Honorable Roger Wicker  
Ranking Member  
Subcommittee on Chemical Safety, Waste  
Management, Environmental Justice, and  
Regulatory Oversight  
Committee on Environment and Public Works  
United States Senate  
Washington, DC 20510

Dear Chairman Merkley and Ranking Member Wicker:

Thank you for the opportunity to submit this statement for the record of the subcommittee's hearing on S. 4244, the Alan Reinstein Ban Asbestos Now Act. The American Water Works Association (AWWA) and the Association of Metropolitan Water Agencies (AMWA) have significant concerns about S.4244 and the U.S. Environmental Protection Agency's (EPA's) proposed rule to ban the use of chrysotile asbestos diaphragms in the production of chlorine, sodium hypochlorite and caustic soda by the chlor-alkali sector. EPA's own analysis indicates that such action will impact nearly 30 percent of domestic production that serves the water sector. This will adversely impact the continuity of operations at utilities across the nation and as result, the health protections provided to our customers.

AWWA and AMWA represent drinking water systems that collectively serve over 80 percent of the population. Our primary mission is the protection of public health. We support over 50,000 community water systems nationwide in maintaining an essential lifeline service, safe drinking water. Safe drinking water is critical to both public health and the economic vitality of individual communities across the nation. The majority of these community water systems are part of municipal government, while some are independent authorities, not-for-profit organizations, or investor-owned utilities. No matter the type of ownership, there are three common denominators: 1) they provide a critical infrastructure service, 2) their operations are financially supported by the rate payers in the communities they serve and 3) they are required to comply with regulations promulgated under the Safe Drinking Water Act (SDWA).

SDWA regulations specifically require 1) any water system that relies on surface water or ground water under the influence of surface water (GWUDI) to meet disinfection requirements using chlorine, chlorine/chloramines, ozone, or chlorine dioxide, 2) these same systems must also maintain a chlorine disinfectant residual in the distributed drinking water supply, and 3) primary disinfection at groundwater systems at the direction of primacy agencies. All these provisions are designed to protect the public from pathogens. However, our collective capacity to fulfill this obligation to protect public health would be threatened by S. 4244's proposed ban on chrysotile asbestos – which is commonly used in the production of chlorine.

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The Honorable Roger Wicker  
June 7, 2022  
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S. 4244 would prohibit the “manufacture, processing, use, and distribution in commerce” of “commercial asbestos” within one year of passage of the legislation. “Commercial asbestos” is defined to include asbestiform fibers processed from chrysotile asbestos, which is used by the chlor-alkali sector in diaphragms necessary to produce chlorine, sodium hypochlorite and caustic soda. While S. 4244 would allow existing chlor-alkali facilities to import and use chrysotile asbestos to produce diaphragms for one additional year beyond the prohibition date, AWWA and AMWA have significant concerns that this legislation would curtail domestic chlorine production and adversely impact the continuity of operations at water systems across the nation and therefore threaten the public health of your constituents.

Similarly, EPA’s proposal to regulate certain conditions of use under Section 6(a) of the Toxic Substances Control Act (TSCA) would prohibit, after two years, the manufacture, processing, and commercial use of chrysotile asbestos, “including any chrysotile asbestos-containing products or articles” such as diaphragms in the chlor-alkali industry. The effects of this ban would be identical to those of S. 4244 and would introduce new uncertainties into the availability of chlorine for water treatment activities.

Existing market pressures are pushing up the cost for chlorine – costs that water systems must pass on to their ratepayers. We gathered information from our members about the cost of chlorine. Our members have been experiencing significant increases in the cost of chlorine over the last 18 months and future increases are anticipated. According to AWWA’s recent national survey, on average the cost for each ton of chlorine delivered to water systems has increased over 160%. The lowest reported cost in the second quarter of 2022 was \$700/ton up from \$221/ton in the first quarter of 2021. The highest reported cost in the second quarter of 2022 was \$7,000/ton. Higher unit costs often fall disproportionately on smaller communities that use 150-pound containers and therefore do not have bulk volume purchasing power. However, multiple large systems have experienced 300-600% increases in the unit cost of chlorine over the same 18-month period. In many cases these dramatic price increases represent millions of dollars in unbudgeted operating expenses that must be absorbed by the water system.

The rapid escalation in the cost of this critical treatment chemical represents a significant opportunity cost to ratepayers. Water systems are already being forced to reallocate limited, available funds away from operational and maintenance needs. Deferred investments in drinking water treatment facility and distribution system repair are direct and real-world consequences of rapid escalation in the cost of chlorine. The proposed legislation and regulation fail to recognize these impacts on water system operations and the public they serve. While S. 4244 provides the President the opportunity to grant, on a case-by-case basis, a temporary exemption to the asbestos ban when necessary to protect national security, no similar waiver is included for the purpose of maintaining chlorine production to protect public health. We believe the latter is as critical for the defense of the country as the availability of chlorine is a necessity to ensure safe drinking water that provides for a sound and vital economy. In any event, the continued availability of chlorine to the nation’s water systems is too important to defer to a discretionary waiver process. If enacted in its current form, S. 4244 would magnify existing economic burdens

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by restricting chlorine production, thus compounding affordability and continuity of operations challenges currently impacting the nation's water systems.

S. 4244 and EPA's proposed regulation would leave water systems with little recourse but to file with EPA for relief under SDWA §1441. This provision is designed to ensure that certain chemicals or substances, including chlorine and caustic soda, that are necessary "for the purpose of treating water in any public water system or in any public treatment works" are "reasonably available." It is not clear that the Administration could meet this obligation under SDWA §1441 in an environment of reduced chlorine production due to the asbestos ban. Clearly, the implications for public health could be profound.

We are also concerned that EPA's economic analysis for the proposed rule made no substantive effort to examine the impact on "reasonable availability" and downstream consequences on water system operations. EPA suggested that "potential supply disruptions could be addressed in the shorter term through increased importing . . . and over time with increased production at existing non-asbestos diaphragm or membrane-based chlor-alkali plants." EPA provides no supply chain capacity analysis to support that finding. In addition, we do not believe that shifting the supply chain towards greater foreign dependency, even if short-term, is in our strategic national interest.

Recent incidents, including Winter Storm Uri and Hurricane Laura, directly impacted chlor-alkali production and availability. However, in responding to those incidents EPA lacked the data necessary to properly examine "reasonable availability" under §1441. We recommend that Congress task EPA with conducting a full supply chain analysis to develop an understanding of how production incidents may impact the availability of chemicals and substances essential to proper water treatment. In addition, we believe §1441 could be more anticipatory of emergency conditions. The current process requires a lengthy notice and comment period that is not responsive to emergency conditions such as those observed in the past year. Congress should explore granting priority allocation to use cases associated with public health, including but not limited to water treatment.

Over the past 18 months water systems across the nation have reported multiple instances of inadequate available disinfectant supply, with respect to both chlorine and sodium hypochlorite. There have been multiple instances where water systems have been within a few days of running out of these disinfectants, when typically, weeks of supply are maintained onsite. This creates significant stress on water systems' ability to assure adequate treatment. Should a system not have adequate disinfectant, SDWA regulations appropriately require public notification, and state primacy agencies would typically require a boil water notification. The lack of adequate disinfection disrupts the entire community for no reason other than chemical supply disruption. Our members have worked diligently to avoid such outcomes. The proposed legislation and regulation unnecessarily place communities at greater risk of experiencing such a disruption and the associated economic consequences.

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The Honorable Roger Wicker  
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It should also be noted that under TSCA section 6(g) EPA was directed by Congress to consider how a proposed action may “significantly disrupt the national economy, national security or critical infrastructure.” In the current rulemaking EPA did not exercise this discretion and no exemption was granted. We believe the agency made a grave mistake given the existing supply chain and economic impacts being experienced in the water sector. At minimum Congress should direct EPA to conduct a full-scale market capacity assessment under §1441 given the strategic national economic and security role of water utilities as essential lifeline critical infrastructure systems under PPD-21 and the Homeland Security Act of 2002. The proposed transition period of 3 years is unreasonable considering similar European regulation provided 5-8 years for the same transition. The proposed legislation and regulation create a federal government-imposed threat to the continuity of community water system operations and an unreasonable cost burden on the nation’s water rate payers. Congress and EPA must consider these financial burdens in weighing whether to pursue these prospective actions.

We recognize that the intent of S. 4244 and EPA’s proposed regulation is to mitigate exposure to asbestos. However, it must be recognized that chrysotile asbestos diaphragms used in the production of chlorine provide a critical disinfectant relied upon by community water systems nationwide to ensure that water is safe to drink. Ensuring the continuity of safe drinking water is a critical public health issue. AWWA and AMWA urge you to, at minimum, modify S. 4244 to ensure that it does not inadvertently create a chlorine supply shortage that could threaten the safety of our nation’s drinking water supply. We would be eager to collaborate with you on this important issue.

Sincerely,

American Water Works Association  
Association of Metropolitan Water Agencies



U.S. Chamber of Commerce

1615 H Street, NW  
Washington, DC 20062-2000  
uschamber.com

June 8, 2022

The Honorable Tom Carper  
Chairman  
Environment and Public Works  
United States Senate  
Washington, DC 20510

The Honorable Shelley Moore Capito  
Ranking Member  
Environment and Public Works  
United States Senate  
Washington, DC 20510

Dear Chairman Carper and Ranking Member Capito:

The U.S. Chamber of Commerce opposes S. 4244, the “Alan Reinstein Ban Asbestos Now (ARBAN) Act.” We appreciate the Committee’s interest in asbestos and its potential impact on public health. We believe that the Frank R. Lautenberg Chemical Safety Act (P.L. 114-182), bipartisan legislation that amended and improved the Toxic Substances and Control Act (TSCA), provides the best framework for assessing and addressing asbestos and other chemical mineral risks. We urge the committee to allow the Environmental Protection Agency to continue its effort to provide appropriate risk evaluation and management for asbestos.

The well-established TSCA process for risk evaluation and risk management provides an effective, science-based framework for addressing chemicals of concern. Agency efforts in this area with respect to asbestos are extensive, ongoing, and have spanned multiple Administrations. Legislative intervention into these efforts could undermine public confidence in and stakeholder support for TSCA processes.

We are also concerned that enactment of S. 4244 would harm the chlor-alkali industry at a time when the U.S. faces inflation and a shortage of chlorine supplies. This industry provides necessary building blocks for many critical supply chains. The bill’s negative effects on the chlor-alkali industry would extend to other sectors, including water treatment, pharmaceuticals, agriculture, food processing, textiles, and energy production. Supply chains already strained by the COVID-19 pandemic are not prepared for the production limitations that would result from enactment of the bill in its current form. As part of the business community’s engagement with EPA to identify and address the potential impacts of TSCA regulation of asbestos use in the chlor-alkali industry, we believe the TSCA process will allow the agency to craft a risk management plan that addresses public health concerns without causing unnecessary disruption to businesses that depend on chlor-alkali products.

In addition, we are concerned that the bill defines “asbestos” in a manner inconsistent with existing statutes and regulations, including the Asbestos Information Act, Asbestos Hazard Emergency Response Act, Clean Air Act, and OSHA’s asbestos general standard. Conflicting definitions of what is “asbestos” will expose industry to litigation and complicate industry’s good faith efforts to comply with the law.

The Alan Reinstein Ban Asbestos Now Act is flawed legislation that risks disrupting EPA’s process that is already underway. The Committee should allow EPA to carry out its TSCA work. We look forward to working with your Committee on these issues and appreciate your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Marty Durbin". The signature is fluid and cursive, with the first name "Marty" and last name "Durbin" clearly distinguishable.

Marty Durbin  
Senior Vice President, Policy  
President, Global Energy Institute  
U.S. Chamber of Commerce

cc: Members of the Senate Environment and Public Works Committee

Senator WICKER. Now, Mr. Simon, I will let you follow up. We have heard testimony from Mr. Boone about the impacts to water utilities of limiting the domestic supply of chlorine. Of course, if we can get chlorine some other way, we need to do that. I would be happy to do it if it doesn't cause people not to be able to afford their water.

But what about the harm this would do to other industries? And could you give us some examples?

Mr. SIMON. Sure, thank you, Senator. Just real quick, there are some very legitimate issues that have been raised today. I want to be very clear: The use in chlor-alkali is very different and is not relevant for some of the issues that we have talked about. We have made a lot of progress to address some of those issues, and we want to continue to do that. I just want to recognize that very different use. The use in chlor-alkali is heavily regulated, it has been used for decades.

Second, we also have an ongoing review underneath the new Toxic Substances Control Act. So if there are additional issues here, we have a process for dealing with that.

But to your point, Senator, the socioeconomic impacts of this legislation, which would impose a 2 year ban within 2 years on chlor-alkali production, is completely unworkable. It will have a significant impact on the availability for drinking water, availability for pharmaceuticals, availability for crop protection chemicals, and hundreds of other products that rely on chlorine.

Chlorine is a key feedstock as well as its co-product, caustic soda. So it will have a significant impact, and you have to overlay that on top of where we are in the economy in terms of current inflation pressures and current supply chain constraints. It is just unworkable, and it will have those socioeconomic impacts.

Our feedback to the Committee and the Subcommittee is, as you are considering these policies, please take into account these important socioeconomic considerations, because they are very relevant. And we factor those into our business.

Senator WICKER. So if I might, Mr. Chairman, there is no evidence that anyone has ever been harmed by drinking this water that used an asbestos diaphragm in the process back up the line.

Mr. SIMON. No. And just to be clear, so the chrysotile asbestos used in chlor-alkali manufacturing is used in a closed loop process within our facilities. It does not leave that, it does not enter. So no.

Senator WICKER. OK.

Thank you, Mr. Chairman.

Senator MERKLEY. Thank you very much.

If we turn to Europe and its production, Mr. Simon, since you are the expert on chemicals here, how much of the European production is produced with asbestos diaphragms?

Mr. SIMON. Thank you, Senator. As you have heard today, there is transition underway in the marketplace. I have worked with some of you over the years. We transitioned from mercury cell technology not too long ago, and we worked with Congress to advance that. So there are alternatives, as you have heard. I would just reiterate our point that as you are making these transitions, it is important to consider the socioeconomic considerations, including the determination that this can be used safely.

But to your point, both the EU and Canada have issued phase outs for the use of asbestos diaphragm technologies. What I would like to emphasize, though, in the case of Europe, it was 25 years. That was for essentially a very limited amount of the production. Also in Canada, that was 11 years, and that was for one facility.

So these socioeconomic considerations are very relevant here. And while the industry is under transition, factoring those into any policy is absolutely critical.

Senator MERKLEY. You also heard the testimony about Occidental and Olin announcing that they are shutting down their asbestos diaphragm units. Why have the companies that have transitioned in the last two decades here in the United States, they have transitioned from asbestos diaphragms to membranes that do not have asbestos, how have they succeeded in the marketplace? You are not contending that their product is more expensive, or they wouldn't be able to sell it, right? So they have done quite well. Two-thirds of the manufacturing has already transitioned.

Mr. SIMON. Thank you, Senator. So just to be clear, there is a very significant economic cost for the transition. So while there are replacement technologies, one, they are not inexpensive, and they are not a drop in replacement. This requires complete redesign of manufacturing facilities.

So there are millions of dollars of cost to making that transition. That is partly why our industry, as companies make individual decisions regarding the technologies they use, they factor in those business conditions, they factor in those socioeconomic considerations. You have seen this phased approach as they evaluate this.

Senator MERKLEY. But those companies that transitioned, did they go out of business because of these higher costs you are referring to?

Mr. SIMON. Not that I am aware of.

Senator MERKLEY. No. They took over two-thirds of the industry. So my point is that we know that we have a commodity in this marketplace that is produced at a market price effectively, and that the industry has chosen for economic reasons, because they are not required to do so by law, to transition, and that two-thirds of the industry has already transitioned. We are talking about this final third. So I just wanted to make that piece of the puzzle clear.

Ms. Reinstein, you have heard the concerns about the speed of transition for the remaining one-third of the industry. And in this bill, we have the same 2 years that EPA has. Is that timeline something we should wrestle with any flexibility on?

Ms. REINSTEIN. There are two points. And I thank you for asking the question, Chairman Merkley. One is, there are only 8 plants left that use asbestos diaphragms. Only 8 out of 42. So we are on the downhill side of that.

As far as time, we know that from the EPA economic analysis, EPA actually has noted that there could be a cost savings if the industry does transition because it will be more efficient using membrane technology.

I am very concerned when we talk about the socioeconomic impact on other fence line communities. I want to be clear: These tons of asbestos coming into different cities like New Orleans, Houston,



elsewhere, these communities are dangerously impacted by raw asbestos. And it can be different.

I am hopeful that with this conversation today that we can look at all communities and come to the table for a transition period that works for everyone. I think you have opened up the discussion, Senator, and it is time that the eight plants end the imports and use.

Senator MERKLEY. Thank you very much. I appreciate that.

It has become quite clear that the U.S. industry has been transitioning, and economically successfully. You pointed out that actually EPA analysis shows that there are cost savings to the transition which explains why companies not required to do so switched technologies already.

So if there are cost savings, and the companies that have transitioned have demonstrated that path, they did not go out of business, they did not have to sell their product at a higher market price, which would have put them out of business, then why are we continuing to import huge amounts of asbestos with all the problems that we know that are associated with it? The answer is, because this Congress has failed to act, and because when the EPA acted, they were struck down by the courts. And may will be struck down again.

So I conclude with the notion that it is way past time that America joined the other developed nations and end the importation and use of asbestos in manufactured products. And I hope the entire committee will take to heart all the testimony they have heard today.

I do thank our witnesses for bringing your information forward. I ask unanimous consent from the members for the record to include materials that are being submitted relevant to today's hearing.

Hearing no objection, so ordered.

[The referenced information follows:]

June 8, 2022

The Honorable Thomas R. Carper  
Ranking Member, Committee on  
Environment and Public Works (EPW)  
U.S. Senate  
513 Hart Senate Office Building  
Washington, DC 20510

The Honorable Shelley Moore Capito  
Ranking Member, Committee on  
Environment and Public Works (EPW)  
U.S. Senate  
172 Russell Senate Office Building  
Washington, DC 20510

The Honorable Frank Pallone, Jr.  
Chairman, Committee on Energy and  
Commerce  
U.S. House of Representatives  
2107 Rayburn House Office Building  
Washington, DC 20515

The Honorable Cathy McMorris Rodgers  
Ranking Member, Committee on Energy and  
Commerce  
U.S. House of Representatives  
1035 Longworth House Office Building  
Washington, DC 20515

Dear Senators Carper and Capito and Representatives Pallone and McMorris Rodgers

We are scientists who have devoted our careers as researchers, teachers, and government officials to combating the public health threat of asbestos. Asbestos causes numerous deadly diseases, including mesothelioma, lung cancer, asbestosis, and ovarian cancer. While asbestos use has declined since its height in 1973, the death toll from asbestos exposure remains alarmingly high, totaling nearly 40,000 Americans every year.

Because there is no safe level of exposure to asbestos, we and many of our colleagues have long recognized that the public will not be protected unless we ban all asbestos mining, importation, and use. Nearly 70 countries around the world have already taken this step but the US has lagged. However, S. 4244 & H.R. 7810, the Alan Reinstein Ban Asbestos Now Act of 2022 (ARBAN), provide Congress with a unique opportunity to eliminate asbestos from US commerce.

In addition to banning the importation and use of asbestos and asbestos-containing products within one year of enactment, we strongly support these bills' transition plan for the 8 remaining chlor-alkali plants that now use asbestos diaphragms and convert to non-asbestos technology. A new Right-to-Know program would also require all importers and users of asbestos and asbestos-containing products during the last three years to inform both the EPA and the public of their activities, including where and how much asbestos has been used and how many people have been exposed.

We urge you to bring S. 4244 and H.R. 7810, a strong bill to protect public health, to the Senate and House floor as soon as possible with the goal of passing ARBAN on a bipartisan basis.

Thank you again for your strong support for this landmark legislation.

Sincerely,

Richard A. Lemen, Ph.D., MSPH. United States Assistant Surgeon General (Ret.), Former Deputy Director and Acting Director, National Institute for Occupational Safety and Health

Arthur L. Frank, MD, PhD, Professor of Public Health and Chair Emeritus of the Department of Environmental and Occupational Health at the Drexel University School of Public Health in Philadelphia

Henry A. Anderson, MD Adjunct Professor, Department of Population Health Sciences, Wisconsin School of Medicine and Public Health, Madison, WI

Casey Bartrem, PhD, Executive Director, TerraGraphics International Foundation

Brad Black, MD, Research Director, Center for Asbestos Related Disease, Libby, MT

Barry Castleman, ScD, Environmental Consultant

Richard Clapp, MPH, DSc, Professor Emeritus, Boston University School of Public Health

John M. Dement, Ph.D., CIH, Professor Emeritus, Division of Occupational & Environmental Medicine, Department of Family Medicine & Community Health, Duke University School of Medicine

Denny Dobbin, CAPT USPHS (ret.)

Peter F. Infante, D.D.S., Dr. PH, Peter F. Infante Consulting, LLC.

Philip J. Landrigan, MD, MSc, FAAP. Director Global Public Health Program, Boston College

Hester J. Lipscomb, Ph.D., Professor Emeritus, Division of Occupational and Environmental Medicine, Department of Community Health and Family Medicine, Duke University Medical School, Durham, N.C.

Steven Markowitz MD, DrPH, Barry Commoner Center, Queens College, CUNY (Institution is listed for affiliation purposes only)

Peter Orris, MD, MPH, FACP, FACOEM. Professor and Chief Attending Physician, Occupational and Environmental Medicine, University of Illinois Hospital and Health Sciences System.

Celeste Monforton, DrPH, MPH, Lecturer in Public Health, Texas State University.

L. Christine Oliver, MD, MPH, MSc, Adjunct Professor, Dalla Lana School of Public Health.

Knut Ringen, DrPH, MHA, MPH, Occupational Health Consultant

Kenneth Rosenman MD, Professor of Medicine, Chief, Division of Occupational and Environmental Medicine, Michigan State University

Leslie Thomas Stayner, PhD. Professor Emeritus, Division of Epidemiology and Biostatistics, University of Illinois at Chicago, School of Public health.

Margrit von Braun, PhD, PE, Professor and Dean, Emerita, University of Idaho

Ian von Lindern, PhD, PE. CEO (ret.), TerraGraphics Environmental Engineering, Co-Founder, TIFO

Laura Welch, MD, Visiting lecturer, George Washington University School of Public Health and Health Services



May 26, 2022

The Honorable Jeff Merkley  
United States Senate  
Washington, DC 20510

The Honorable Suzanne Bonamici  
U.S. House of Representatives  
Washington, DC 20515

Dear Senator Merkley and Representative Bonamici:

On behalf of the American Public Health Association, a diverse community of public health professionals who champion the health of all people and communities, I write to express our strong support for the Alan Reinstein Ban Asbestos Now Act. APHA appreciates your leadership on this legislation to ban the import, manufacture, process or distribution of commercial asbestos.

Passage of your bill is critically important because asbestos continues to be imported and used in the U.S. In 2021, the U.S. International Trade Commission indicates that 100 metric tons of raw asbestos were imported to the U.S. In the first quarter of 2022, 114 metric tons have already been imported to ports in Houston-Galveston, Los Angeles, New Orleans, and Norfolk, Va. Without a ban on asbestos, the U.S. will never be able to reduce the incidence of asbestos-related cancers. ARBAN will put the U.S. on a path to ban asbestos and join nearly 70 countries that have already done so.

The scientific evidence is unequivocal. Asbestos is a potent carcinogen and there is no safe level of exposure to it. Asbestos causes mesothelioma and cancer of the lung, larynx, and ovary. It is also associated with excess risk of cancers of the pharynx, stomach, and colorectum. An estimated 40,000 Americans die from an asbestos-related disease every year.

Thank you for your longstanding commitment to protecting public health. We are eager to work with you to see ARBAN become law.

Sincerely,

A handwritten signature in black ink, appearing to read 'Georges C. Benjamin'.

Georges C. Benjamin, MD  
Executive Director



# INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS®

EDWARD A. KELLY  
General President

FRANK V. LIMA  
General Secretary-Treasurer

May 17, 2022

Senator Jeff Merkley  
U.S. Senate  
531 Hart Senate Office Building  
Washington, D.C. 20510

Representative Suzanne Bonamici  
U.S. House of Representatives  
2231 Rayburn House of Office Building  
Washington, D.C. 20515

Dear Senator Merkley and Representative Bonamici,

On behalf of the 327,000 professional fire fighters and emergency medical responders of the International Association of Fire Fighters, I write in full support of the Alan Reinstein Ban Asbestos Now Act of 2022 (ARBAN Act). This important bill would end the importation, commercial use, and distribution of the widely known carcinogen which is directly responsible for asbestosis, mesothelioma and other forms of cancer experienced by our nation's federal fire fighters.


As you know, the ARBAN Act is the most comprehensive asbestos ban legislation in 30 years, and this critically needed legislation would

- Prohibit all six asbestos fibers plus Libby Amphibole, winchite, and richellite.
- Advance the asbestos utilizing industries' transition to non-asbestos technology.
- Establish mandatory asbestos reporting under EPA's *Chemical Data Reporting* rule, critical to informing fire fighters of the locations of these toxic fibers.
- Publicize the information to those who may be subject to the prohibition.

In recognition of the detrimental health impact of this toxic material, over seventy nations have an importation and use ban in place. However, the United States continues to import nearly 400 metric tons of harmful raw asbestos annually. Manufacturers continue to produce and sell asbestos holding products that end up in homes and businesses in every community. Fire fighters are repeatedly exposed to airborne asbestos fibers released when responding to fires and other hazardous conditions. Fire fighters experiencing exposure to airborne asbestos are 200 percent more likely to suffer from an asbestos related disease than the general public. As occupational cancers have risen to become the leading cause of death among fire fighters, the IAFF is committed to combatting this deadly disease on all fronts including strongly supporting the ARBAN Act which establishes a nationwide ban on asbestos.

The IAFF stands proudly alongside you as you introduce the ARBAN Act in the U.S. Senate and House of Representatives. I am confident the ARBAN Act will significantly reduce or nearly eliminate the 40,000 asbestos related deaths occurring in the country each year, including dozens of fire fighters. We owe it to this generation and all future generations of fire fighters to take steps to protect their lives. I thank you for partnering with the IAFF to craft this measure and for your bold leadership and commitment to bring forward this sensible legislation.

Sincerely,

  
Edward A. Kelly  
General President

July 8, 2022

Dr. Michal Ilana Freedhoff  
Assistant Administrator  
Office of Chemical Safety and Pollution Prevention  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave, NW  
Washington, DC 20460

**Re: EPA's Proposed Rule "Asbestos Part 1: Chrysotile Asbestos; Regulation of Certain Conditions of Use under Section 6(a) of the Toxic Substances Control Act," Docket ID # EPA-HQ-OPPT-2021-0057**

**Request to Withdraw Or Modify Proposed Restrictions On Diaphragms In The Chlor-Alkali Industry, Sheet Gaskets In Chemical Production, and Other Gaskets Contained In Proposed § 751.X05**

Dear Assistant Administrator Freedhoff:

The organizations signing on to this request appreciate the opportunity to comment on the referenced proposal issued by the Environmental Protection Agency.

Chlorine chemistry is an integral part of the goods and products Americans use every day. The computer screen – or paper – on which you are reading this letter was made using products that are derived from chlorine and co-product sodium hydroxide chemistry. The chlor-alkali process, which utilizes chrysotile asbestos safely to manufacture chlorine and sodium hydroxide, or caustic soda, is also used to treat drinking water. In addition to water treatment, chlorine from this same process helps to ensure the safety of consumer goods, medical equipment, medications, and other life-enhancing products. We, the undersigned organizations, urge you to reconsider the need for the U.S. to transition completely away from targeted and safe uses of chrysotile asbestos in the proposed Toxic Substances Control Act (TSCA) Risk Management Rule.<sup>1</sup> An abrupt ban would affect one-third of America's chlorine capacity and impact many industries. It would also affect a large number of chemical manufacturing sites using sheet gaskets across the country that would additionally impact supply of other needed chemistries to downstream users. At a time when the United States is facing inflation and supply chain issues, we respectfully urge the Biden-Harris Administration not to risk severely reducing the ability of Americans to have access to clean drinking water and essential products that rely on chlorine.

Chlorine and sodium hydroxide are critical building block chemicals, and the chlor-alkali sector supports a broad range of essential uses that are key to the U.S. economy. Industry has maintained safe use of asbestos diaphragms for over five decades and this chlorine chemistry technology is important to

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<sup>1</sup> Asbestos Part 1: Chrysotile Asbestos; Regulation of Certain Conditions of Use under Section 6(a) of the Toxic Substances Control Act (TSCA). 87 Fed. Reg. 21706 (April 12, 2022).

public health. The interruption to the domestic chlorine market that would result if EPA finalized the current proposal could set in motion a catastrophic chain-reaction for many industries and would negatively impact a large portion of the population. It is important to note that EPA based its risk elimination proposal on an estimated worker subpopulation of 100 highly trained and protected workers in the entire chlor-alkali industry, which numbers in the thousands. EPA made the incorrect assumption that these workers handle asbestos without using personal protective equipment (PPE). It ignored that asbestos use in the chlor-alkali process is heavily regulated by the Occupational Safety and Health Administration (OSHA), which requires the use of PPE, and that the asbestos handling takes place under highly controlled conditions. The chlor-alkali industry has provided substantial evidence in the administrative record during the risk evaluation phase on how it safely uses asbestos diaphragms with appropriate engineering and administrative control measures, and there is no risk posed to the general public or surrounding communities.

According to the Chlorine Institute, 33% of the U.S. chlorine capacity depends on the use of asbestos diaphragms, and therefore, the proposed rule by the EPA for the chlor-alkali sector will have harmful supply chain and economic consequences. The subsequent sections highlight the necessity of chlorine and its byproducts in the following sectors:

#### Chemical and Basic Materials Production Sector

Many products of the chemical industry depend on chlorine chemistry. A major use of chlorine is that it is used to produce various other chemicals such as propylene oxide, chlorates and organic compounds like carbon tetrachloride and synthetic rubber.

Chlorine is also one of the basic feedstocks used to make durable and versatile materials like polyvinyl chloride (PVC), which is essential to the future drinking water, sewerage, irrigation, and electric vehicle charging infrastructure of the U.S. PVC is also critical to the medical community since it is used in many life-saving products, including many medical devices, such as blood bags, medical tubing, oxygen masks and ventilators. If this Proposal is enacted, that would lead to shortages of these products. This would mean that pipe, conduit, and other products that are key to the successful roll-out of the Infrastructure Investment and Jobs Act (IIJA) would be made with alternatives that are less environmentally friendly than PVC resin that is made in America.

#### Manufacturing Sector

Not only is chlorine critical as a building block for consumer goods, but the chlor-alkali industry directly employs more than 20,000 Americans and another 245,000 are employed by chlor-alkali-related industries.<sup>2</sup> Chlorine chemistry is used to manufacture processors that power smart phones, digital tablets and computers along with hybrid car batteries.<sup>3</sup> Chlorine chemistry is an integral part of the goods and products Americans use every day. The EPA's economic justification and analysis of the likely costs and benefits of the proposed ban on Chrysotile Asbestos manufacture, importation or use in commerce is cleverly presented in a manner that disguises much of the real economic significance of the matter.

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<sup>2</sup> Fisher, Dan. Dixon Valve, Chlor-Alkali: State of the Market in 2020. Available at [https://www.dixonvalve.com/sites/default/files/Chlor-Alkali-State-of-the-Market-2020\\_0.pdf](https://www.dixonvalve.com/sites/default/files/Chlor-Alkali-State-of-the-Market-2020_0.pdf)

<sup>3</sup> ChemicalSafetyFacts.org, Chlorine, American Chemistry Council, 2022. Available at <https://www.chemicalsafetyfacts.org/chlorine/>



### Energy Sector

Chlorine is an essential component to the energy sector. In both solar and wind energy, chlorine chemistry is used in the manufacturing of solar panel chips and wind turbine blades. In addition, some plastic foam insulations and vinyl windows manufactured that utilize chlorine chemistry increase the efficiency of home heating and air-conditioning systems and reduce greenhouse gas emissions.<sup>4</sup> The current Administration has put forth ambitious greenhouse gas guidelines, which rely on the ability to use low emission refrigerants, and these refrigerants are based in chlorine chemistry. Chlorine is also a component in lightweight materials that are needed to produce lower emission vehicles as well as items that increase household energy efficiency, like spray foam insulation. Many items that are needed to help our country move towards lower carbon intensity are based in the essential chemical chlorine.

### Food and Agriculture Sector

The need for chlorine extends far beyond the chemical production and manufacturing sectors of our economy. Chlorine is a building block chemical in the crop protection supply chain. In addition, chlorine-based products are used in commercial food preparation for sanitizing and disinfecting equipment and food contact surfaces, destroying food-borne bacteria and in manufacturing packaging to prevent contamination and keep food fresh.<sup>5</sup> As climate change increasingly strains farm management practices, more and more agricultural producers are moving to some form of irrigation,<sup>6</sup> with a heavy reliance on indoor growing facilities that need PVC pipe to operate.

### Healthcare and Public Health

Chlorine has become increasingly important in recent years as we have witnessed the rise of COVID-19. Chlorine is a main component of bleach, disinfectants, medical tools and devices, as well as serving as the foundation for 85% of pharmaceuticals.<sup>7,8</sup> As people mitigate public health risks in a post-COVID world, chlorine is in demand now more than ever.

### Water and Wastewater

For over 100 years, drinking water chlorination has been used and is a major factor in preventing cholera and other waterborne diseases.<sup>9</sup> Approximately 98% of public drinking water treatment facilities use some form of chlorine-based disinfectant, according to American Water Works Association. Residual chlorine in drinking water is mandated through the National Primary Drinking Water Regulations. A series of events between March 2021 and June 2021 nearly led to boil water notices in multiple cities due to sudden chlorine production reductions. While drastic measures were taken to avoid boil water notices, these events go to show how any unplanned restrictions of chlorine can immediately generate a supply shortage.

<sup>4</sup> ChemicalSafetyFacts.org, Chlorine, American Chemistry Council, 2022. Available at <https://www.chemicalsafetyfacts.org/chlorine/>

<sup>5</sup> Sustainable Progress, World Chlorine Council, 2017. Available at <https://worldchlorine.org/wp-content/uploads/2018/10/WCC-Sustainable-Progress-Version-3-2017.pdf>

<sup>6</sup> Irrigation and Water Use, USDA, 2022. Available at <https://www.ers.usda.gov/topics/farm-practices-management/irrigation-water-use/>

<sup>7</sup> ChemicalSafetyFacts.org, Chlorine, American Chemistry Council 2022. Available at <https://www.chemicalsafetyfacts.org/chlorine/>

<sup>8</sup> What is Chlorine Used For?, March 2021. Available at [https://www.medicinenet.com/what\\_is\\_chlorine\\_used\\_for/article.htm](https://www.medicinenet.com/what_is_chlorine_used_for/article.htm)

<sup>9</sup> Drinking Water Chlorination: A Review of Disinfection Practices and Issues. Available at <https://waterandhealth.org/wp-content/uploads/2017/04/dwwp.pdf>

#### Sheet Gaskets and Other Gaskets

In addition to the chlor-alkali industry, asbestos has widespread use in sheet gaskets and other gaskets in chemical plants and refineries as a mechanical seal to prevent leakage from or into objects under compression and other challenging conditions. These gaskets prevent liquids and vapors from being released from joints called flanges in pipes and other equipment. The number of asbestos gaskets remaining in use across industry in chemical plants and refineries is suspected to be in the hundreds of thousands and potentially the millions, as the gaskets are durable can be safely utilized for decades (typically trapped between two pipe flanges) before needing to be replaced.

The chemical plant and refining industry produces energy, essential fuels, pharmaceuticals, sanitizing agents, and other chemicals. Replacing the asbestos gaskets in the short timeframe EPA has suggested would cause plants and refineries to shut down from weeks to years at a time. This is not the time for the nation to shut down essential infrastructure for extended periods of time to remove and replace gaskets in the chemical plant and refining industry, leading to further supply chain disruptions beyond those that the nation is already facing. Premature removal is likely to have a debilitating effect, resulting in shortages of fuels, energy, and other essential chemicals, including sanitizing agents.

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We encourage EPA to consider the impacts a severe and abrupt reduction in chlorine production would have on the supply chain and the economy as well as the unintended consequences of forcing chemical plants, refineries, power plants and pharmaceutical companies to close for extended periods of time to replace sheet and other gaskets. We urge the Administration to think about these drastic economic and environmental impacts the proposed rule will have on American lives. It is our hope that EPA will work with industry to ensure there is no shortfall in the availability of domestic chlorine, fuel or other critical supplies by recognizing that asbestos in these applications has been and can continue to be used safely. TSCA provides EPA with a variety of risk management tools short of a complete ban on these conditions of use. We urge EPA to re-propose this rule and avoid the disruptive public health, economic, and social consequences that are likely to flow from the agency's proposed approach.

Sincerely,

American Chemistry Council  
 American Forest & Paper Association  
 American Fuel and Petrochemicals Manufacturers  
 American Petroleum Institute  
 Chemical Fabrics & Film Association  
 Chemical Industry Council of Delaware  
 Chemical Industry Council of Illinois  
 Chemistry Council of New Jersey  
 Council of Producers and Distributors of Agrotechnology  
 The Chlorine Institute  
 The Fertilizer Institute

Georgia Chemistry Council  
Flexible Packaging Association  
Industrial Mineral Association—North America  
Louisiana Chemical Association  
Manufacture Alabama  
Massachusetts Chemistry & Technology Alliance  
Michigan Chemistry Council  
National Association of Chemical Distributors  
New York State Chemistry Council  
North American Millers' Association  
Ohio Chemistry Technology Council  
Pennsylvania Chemical Industry Council  
Plastics Industry Association  
Pool & Hot Tub Alliance  
South Carolina Chemistry Council  
Texas Chemistry Council  
U.S. Chamber of Commerce  
Vinyl Institute  
Virginia Chemistry Council  
Water Mission  
West Virginia Manufacturer Association

Senator MERKLEY. Senators will be allowed to submit questions for the record through the close of business on June 23rd, 2022, with responses to be returned from witnesses. We would ask for your cooperation in this to the committee by July 7th, 2022.

With that, the hearing is adjourned.

[Whereupon, at 11:18 a.m., the hearing was adjourned.]

