2023 Comprehensive Asbestos Report:

The Analysis of Imports, Use, Impact on Human Health, and Current Regulations and Policy

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Asbestos remains legal and lethal in the United States.

Nearly 20 years ago, my family received the devastating news that my husband, Alan Reinstein, had a fatal illness called mesothelioma. He had contracted this disease through an unknown exposure to asbestos, a demonstrated carcinogen. In the two decades since Alan died in 2006, I have researched asbestos extensively, educating myself on the history of the toxin. I also studied the ongoing legal and legislative battles surrounding asbestos and the industry that continues to import and use it. Though I am not a scientist, the information in this report has been used in my testimonies, briefings, and presentations.

For far too long, we have asked industry about asbestos importation and use and their impact on human health, but most often received selective information that failed to present critical facts. This report is a culmination of the past 20 years of hearing testimonies and research. It evaluates the current changes in the asbestos industry, the legal and legislative policies related to asbestos regulation, and the benefits of a future free of asbestos.

Executive Summary

The facts are irrefutable.

- Asbestos is a human carcinogen.
- All forms of asbestos can cause disease or cancer.
- There is no safe level of exposure.

When asbestos fibers become airborne, they can get trapped in the lungs and cause scarring and inflammation. Asbestos exposure can cause suffering and fatal illnesses, including mesothelioma, asbestosis, and cancers of the lung, larynx, and ovaries.

In 1976, National Institute for Occupational Safety and Health (NIOSH) was the first U.S. federal agency to recommend a ban on asbestos in the workplace.

Nearly fifty years later, despite its known toxicity, asbestos remains legal in the United States. The U.S. is the last Westernized nation where asbestos can be imported and used legally. Nearly 70 other countries have already banned the toxin. Individual asbestos fibers cannot be seen by the naked eye.

The Environmental Protection Agency (EPA) attempted to ban asbestos in 1989. However, due to industry opposition, the ban was overturned in court, and since then, profits have continued to prevail over public health. Though most Americans assume that asbestos can no longer be imported and used, it remains an ever-present threat. The chlor-alkali industry is the last industry to import and use raw asbestos, which it relies on to manufacture chlorine and caustic soda.

However, there has been a recent shift in the industry. Olin Corporation, the largest chlor-alkali producer in the world, stopped importing raw asbestos in 2021. The third largest producer, Westlake, stopped asbestos importation in late 2016. While still using stockpiled asbestos, Olin announced in 2023 that it is supporting a ban, saying, "As the largest global and U.S. producer of chlor-alkali, and as the owner of the largest global and U.S. asbestos-based diaphragm chlor-alkali capacity, Olin Corporation would support an EPA action to ban the installation of any new or replacement asbestos-based diaphragms in two years, in combination with an additional five years to operate any existing asbestos-based diaphragm production cells."

This past September, Olin's CEO, Scott Sutton, sent a letter to the Asbestos Disease Awareness Organization (ADAO) in support of ADAO's annual conference. Sutton wrote, "As the leader in total U.S. and global chlorine production and the largest U.S. and global producer from the asbestos diaphragm process, we are supporting the end of the use of asbestos in our industry."

Nearly fifty years later, despite its known toxicity, asbestos remains legal in the United States. The U.S. is the last Westernized nation where asbestos can be imported and used legally.

As of April 2023, only one company in the United States still imports asbestos: Occidental Chemical Corporation (OxyChem). They continue to use asbestos diaphragms in their five plants located in Kansas, Louisiana, and Texas.

The chlor-alkali industry transition comes in the wake of major legal and legislative initiatives to ban asbestos.In 2022, the EPA proposed a rule under the Toxic Substances Control Act (TSCA) to prohibit the import and use of chrysotile asbestos in chlor-alkali diaphragms and asbestos-containing products. Though the rule is a landmark step and an encouraging move from the EPA, it unfortunately only addresses one fiber and six conditions of use. To fully protect our public health, we must ban all fibers and conditions of use. Senator Jeff Merkley and Representative Suzanne Bonamici have been the champions for the Alan Reinstein Ban Asbestos Now Act (ARBAN) (S.1069 and H.R. 2402) that would ban the importation and use of all six asbestos fibers and the Libby Amphibole.

In a society where truth should be easily accessible, my foremost objective with the "2023 Comprehensive Asbestos Report" is to develop a thorough resource for stakeholders spanning various sectors—including the media, policymaking bodies, and industry circles. Asbestos is not a relic of the past but a pressing contemporary threat that necessitates informed action to spur meaningful change.

I respectfully dedicate this report to the victims, their families, and communities who have struggled, suffered, or died from the asbestos man-made disaster. I know far too well that for each life lost, a shattered family is left behind.

Sincerely,

Linda Reinstein,
ADAO co-founder and president

What is asbestos and why does it matter?

The facts are irrefutable.

- Asbestos is a human carcinogen.
- All forms of asbestos can cause disease or cancer.
- There is no safe level of exposure.

Asbestos is a group of naturally occurring fibrous minerals widely used in various industrial and building products due to their excellent tensile strength, resistance to heat and chemicals, and insulating properties. The six primary types of asbestos minerals are chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite.

Once known as the "Magic Mineral," asbestos was used in many industries, including construction, fireproofing, insulation, petrochemical, automotive, and shipbuilding. Scientific evidence mounted as early reports and studies linked exposure to asbestos to deadly diseases. In 1906, Dr. Montague Murray, a physician in London's Charing Cross Hospital, performed a postmortem examination on a British asbestos textile plant worker and attributed his death to lung fibrosis caused by asbestos dust exposure. Dr. Irving Selikoff (1915-1992), one of the world's foremost medical experts on asbestos-related diseases, told more than 400 scientists at the 1964 Conference on the Biological Effects of Asbestos that asbestos was a mortal danger to millions of workers. The International Agency for Research on Cancer (IARC) concluded in 1977 and 1987 that asbestos qualifies as a human carcinogen. IARC determined that exposure to all forms of asbestos increases the risk of lung cancer and mesothelioma.

However, according to a U.S. Geological Survey, the United States remained one of the top five worldwide consumers of asbestos until the late 1980s. In 2012, the chlor-alkali industry was responsible for the majority of imports, and in 2015, it became the only industry to import raw asbestos into the United States.

The disease and death caused by asbestos also reverberate through our environment, culture, economy, and government. Below, we describe all the threats that asbestos poses.

1. **Health Hazards**
    a. **Asbestosis**: A chronic lung disease caused by the inhalation of asbestos fibers, leading to scarring of lung tissue.
    b. **Mesothelioma**: A rare and aggressive cancer primarily caused by asbestos exposure, affecting the linings of the lungs, abdomen, or heart.
    c. **Lung Cancer**: A well-established risk for individuals exposed to asbestos, especially when combined with smoking.
    d. **Pleural Disorders**: Conditions affecting the lining of the lungs, including pleural plaques and pleural thickening.
    e. **Other Cancers**: There is sufficient evidence that asbestos causes cancers of the larynx and ovary. The IARC Monograph also reported that positive associations have been observed between asbestos and cancers of the stomach, pharynx, and colorectum.
2. **Environmental Impact:** Asbestos fibers can contaminate air and water sources, posing a risk to communities near asbestos mines or factories.
3. **Legacy Issues:** Many buildings and products still contain legacy asbestos, which poses ongoing risks of exposure and necessitates costly removal or management programs.
4. **Economic Burden:** The health and environmental impacts of asbestos have led to substantial economic burdens, including healthcare costs for treating asbestos-related diseases and costs associated with asbestos remediation in buildings and the environment.
5. **Legal and Regulatory Considerations:** The health risks associated with asbestos have led to extensive legal actions by victims of asbestos exposure.

Given the profound health risks and broader societal impacts associated with asbestos, understanding its properties, uses, and dangers is crucial in promoting public health and safety. It also emphasizes the importance of efforts to manage and mitigate the risks of asbestos exposure, particularly in settings where legacy asbestos is present.

The Occupational Safety and Health Administration (OSHA) states, "*There is no 'safe' level of asbestos exposure for any type of asbestos fiber.*"

The public health impact of asbestos

Over 40,000 Americans die each year from diseases caused by asbestos, including mesothelioma, asbestosis, and cancers of the lung, larynx, and ovaries. The latency period of asbestos-caused illnesses is 10-50 years, and the fibers are invisible to the human eye, meaning most people do not know they're sick for years after exposure. Asbestos has also been found in cosmetics, personal care products, and children's toys. Fifteen years ago, ADAO conducted independent product tests and confirmed that five products, including a child's toy, were contaminated with asbestos.

Pathways of Exposure

The 2014 OSHA Fact Sheet states: *Asbestos fibers are released into the air during activities that disturb asbestos-containing materials. The asbestos fibers can then be inhaled without knowing and trapped in the lungs. If swallowed, they can become embedded into the digestive tract as well.*

Asbestos exposure can occur through several pathways, potentially leading to adverse health outcomes, including respiratory diseases and cancers.

The primary pathways of asbestos exposure are as follows:

- **Occupational Exposure:**
  - *Mining and Milling:* Individuals working in asbestos mines and processing plants (no longer operating in the US) were at a high risk of exposure due to the direct handling of asbestos-containing materials.
  - *Construction and Renovation:* Workers in the construction and renovation industries can be exposed when handling asbestos-containing building materials, especially in older buildings.
  - *Manufacturing*: Employees in factories that manufactured asbestos-containing products, like insulation, tiles, and automotive parts, were exposed to airborne fibers.
  - *Shipbuilding and Repair*: Asbestos was widely used in shipbuilding, and workers were exposed during the repair or dismantling of ships.
  - *Automotive Repair:* Mechanics may be exposed while working with asbestos-containing brake and clutch materials.
- **Environmental Exposure**
  - *Natural Deposits*: People living near natural asbestos deposits can be exposed to airborne fibers released through natural weathering processes or human activities.
  - *Industrial Emissions*: Residents near industries using asbestos may be exposed to fibers released into the air and water.
  - *Demolition and Waste Sites:* Exposure can occur near demolition sites or waste sites where asbestos-containing materials are not handled properly.
- **Para-occupational and Domestic Exposure**
  - *Take-home Exposure:* Workers can inadvertently bring asbestos fibers home on their clothing, shoes, or skin, exposing family members.
  - "*Deadly hug*": When microscopic asbestos remains on the clothes or skin of a worker and is spread to their loved ones through touch or close personal contact.
  - *DIY Home Renovations:* Homeowners doing renovations can be exposed if they disturb asbestos-containing materials in older homes.
  - *Consumer Products:* Some consumer products, including certain talcum powders and crayons, contain asbestos.
- **Secondary and Bystander Exposure**
  - *Schools and Public Buildings:* Individuals can be exposed in schools or public buildings containing deteriorating asbestos materials.
  - *Bystander Exposure:* Individuals can be exposed to asbestos as bystanders near construction or industrial sites where asbestos is being used or removed.

Understanding these pathways is critical in developing strategies to prevent exposure and protect public health. It also underscores the need for regulations and safety practices to prevent exposure and eliminate diseases.

Over 40,000 Americans die each year from diseases caused by asbestos, including mesothelioma, asbestosis, and cancers of the lung, larynx, and ovaries.

Asbestos-caused diseases disproportionately harm vulnerable communities

Asbestos disproportionately imposes environmental hazards that threaten communities of color, including pollution, carcinogens, and unclean water. This environmental risk is clearly seen in Davidson, North Carolina, where there are more than 2,000 tons of asbestos-contaminated soil in the 130-year-old Linden Mill.

For about 50 years, from 1930 to about 1970, Carolina Asbestos Co. made asbestos fabric, shingles, and brake linings at the mill. When the mill started making asbestos products, it was a boon for Black workers, who had not previously been allowed to work at the cotton mill but were employed at the factory. According to reporting by WFAE, many workers developed deadly asbestos-caused diseases and ultimately lost their lives, leading to a deep sense of distrust among longtime residents.

The Danger of Legacy Asbestos

Legacy asbestos refers to asbestos-containing materials that were used in the past and remain in existing structures, equipment, products, or environments. These might include buildings, ships, industrial facilities, and other infrastructures constructed or manufactured before the strict regulations or bans on asbestos use were implemented.

In this context, the term "legacy" highlights the persistent risk posed by these existing materials, even many years after the initial use of asbestos has declined or been banned. The management and remediation of legacy asbestos are critical in preventing asbestos-related diseases, as these materials can still release asbestos fibers into the air if they are disturbed, deteriorated, or damaged, posing a health risk. It's a significant concern because it underscores the ongoing need for vigilance and management to protect public health, even as we move away from new uses of asbestos.

The number of homes contaminated with asbestos can vary greatly depending on the region, the period of construction, and the prevalence of asbestos-containing materials used in the local construction industry.

Here's a **general guideline** about structural asbestos contamination:

Pre-1990s Construction: Without a ban, especially homes built before 1990, can contain asbestos-contaminated materials, as asbestos was commonly used in a variety of building products, including insulation, roofing, and flooring materials.

Regional Variations: Different regions have varying timelines for asbestos usage. Some regions have used asbestos in home construction well into the 1990s, whereas others restricted or banned its use earlier.

Type of Construction and Materials: The type of construction and the materials used can also be a factor. For instance, homes with popcorn ceilings, vinyl floor tiles, vermiculite insulation, or certain types of insulation from the mid-20th century are likely to contain asbestos.

Asbestos Risk After Natural Disasters

In the wake of natural disasters like fires, floods, and hurricanes, asbestos fibers used in older structures that have been damaged can become airborne, creating grievous health risks. Recognizing and mitigating these risks is critical to prevent further loss of life. According to NPR, "climate change has helped drive a fivefold increase in the number of weather-related disasters in the last 50 years." And these natural disasters are becoming more severe. All this suggests a greater likelihood of people being exposed to asbestos and toxins after a disaster.

In May 2023, Reuters published an investigation following the tragic earthquake in Turkey. The story, "The toxic dust from Turkey's earthquakes" sheds light on the severe consequences of natural disasters like earthquakes, specifically focusing on the widespread presence of toxic dust and its potential impact on human health and the environment.

The aftermath of the earthquakes in Turkey left a trail of destruction, raising alarming concerns about a "secondary disaster" of toxic contamination that may surpass the quakes' impact. Hatay province, a critical agrarian hub contributing significantly to Turkey's agricultural GDP, now faces the daunting task of managing the hazardous debris resulting from the earthquakes. Further, the asbestos released into the air from this natural disaster will cause seemingly silent damage for years to come, according to Mehmet Ensari. This particular situation is true of natural disasters in the U.S. due to our continued imports and use of asbestos.

More recently, the devastating wildfire in Maui that killed hundreds and destroyed entire communities raised concerns about asbestos exposure. Meanwhile, a study released by the National Library of Medicine revealed that in Libby, MT, trees in "areas surrounding the abandoned mine have accumulated amphibole asbestos fibers on their bark surface, providing for inhalation exposures."

This puts citizens at risk of exposure, but it also means that fire fighters and citizens alike could be greatly impacted if a natural disaster such as a wildfire reaches these trees. The study goes on to say: "Occupational studies simulating wildland fire fighting and routine U.S. Department of Agriculture (USDA) Forest Service activities have also been conducted in the forested areas surrounding the abandoned mine, demonstrating the potential for inhalation exposures during common regional workplace activities."

In the wake of natural disasters like those mentioned, it's important to remember that asbestos has often been found in a variety of materials, such as:

- Insulation
- Floor Tiles, especially vinyl tiles
- Roofing and Siding Shingles
- Asphalt roofing materials, especially on commercial buildings
- Textured Ceiling Treatments and Patching Compounds
- Walls and Floors
- Hot Water and Steam Pipe insulation
- Oil and Coal Furnace insulation
- Automotive Parts, including brake pads and linings, clutch facings, and gaskets

Preventing Asbestos Exposure Following A Natural Disaster:

1. ***Seek Expert Assistance:*** If you suspect asbestos contamination on your property, follow established EPA guidelines and regulations. Hire a trained and accredited asbestos professional for recommendations, testing, and abatement.
2. ***Avoid Damaged Buildings:*** Refrain from entering damaged structures, particularly older ones. Disruptions may release asbestos fibers.
3. ***Take Personal Protection and Decontamination Measures***
   a. Wear, use, and dispose of Personal Protective Equipment (PPE) following guidelines for safe and secure use.
   b. Use masks with suitable filtration, preferably N95 respirators or better.
4. ***Protect Others:*** To keep others safe, avoid carrying asbestos fibers out of a worksite where they can later be inhaled by others (e.g., by family members at home).
   a. Wear protective outer clothing and gloves that can be removed and discarded.
   b. Wash exposed parts of the body with soap and water.
5. ***Limit Dust Generation:*** If you need to be in affected areas, wet the debris to curb dust. Clean with wet rags or mops and dispose of them properly afterward.
6. ***Avoid Sweeping or Vacuuming:*** These actions can render asbestos airborne.
7. ***Proper Waste Disposal:*** Dispose of potential asbestos-containing debris in sealed, leak-proof containers. Abide by local guidelines for the appropriate disposal of asbestos waste.
8. ***Isolate the Area:*** If an area is suspected to have asbestos, restrict its access. Use barriers, barrier tape, or cones to demarcate the zone.
9. ***Renovation & Demolition:*** For damaged asbestos-containing facilities, enlist a licensed asbestos removal contractor for repairs or demolition. They possess the required skills, state licensing, and tools to handle such hazards.
10. ***Educate Others:*** If you're in a leadership or influential role, disseminate this knowledge among peers, neighbors, and family to maintain communal safety.

Fire Fighters Increased Risk of Disease

Though anyone is at risk of exposure after a natural disaster or an accidental fire, our first responders face the greatest risk. A 2013 NIOSH Study of fire fighters found that "the population of fire fighters in the study had a rate of mesothelioma two times greater than the rate in the U.S. population as a whole." In a 2022 study by the International Agency for Research on Cancer (IARC), Occupational Exposure as a Firefighter, IARC wrote, "occupational exposure as a firefighter is carcinogenic to humans (Group 1)." Fire fighters may be exposed to combustion products from fire, building materials, chemicals in fire fighting foams, flame retardants, diesel exhaust, and other hazards.

In the study, IARC writes, "Firefighters may be exposed to combustion products from fires (e.g., polycyclic aromatic hydrocarbons, particulate matter), building materials (e.g., asbestos), chemicals in firefighting foams (e.g., per- and polyfluorinated substances), flame retardants, diesel exhaust, as well as other hazards (e.g., night shift work and ultraviolet or other radiation)."

The study, published in Occupational and Environmental Medicine, examined cancer incidence among nearly 30,000 fire fighters in Chicago, San Francisco, and Philadelphia employed between 1950 and 2009.

Always leading with conviction to protect their members, The International Association of Fire Fighters (IAFF) has boldly led the way for an asbestos ban. IAFF General President Edward Kelly stated, "*Rigorous studies have indicated that fire fighters are twice as likely as the general population to develop illnesses associated with asbestos exposure, primarily due to their frequent encounter with airborne asbestos fibers, often encountered at fire and emergency scenes.*"

In September 2023, IAFF sent a letter of support to ADAO in honor of our annual conference. In the letter, IAFF General President Kelly wrote:

> "*Each September, the IAFF commemorates the valiant fire fighters and emergency medical responders who tragically succumbed to injuries sustained in the line of duty, including those directly caused by asbestos-related illnesses. These courageous sisters and brothers form a part of the staggering statistic of 40,000 Americans who fall victim to asbestos-related maladies each year—a number that regrettably continues to surge. Thanks to the pioneering efforts of organizations like ADAO, it is clear that fire fighters bear a grossly disproportionate burden of this suffering*."

Legacy asbestos in schools creates a dangerous situation for our nation's children.

Schools present a significant risk. School teachers and janitorial staff are considered among high-risk groups for asbestos-caused diseases because many schools were built with and still contain asbestos-containing materials (ACMs) that have become friable (easily releasing asbestos fibers through regular use).

According to the 2018 Environmental Protection Agencies (EPA) Office of Inspector General (OIG) Report, "substantial amounts of asbestos, particularly in sprayed form, have been used in school buildings, especially from 1946 through 1972. More than 50 million students from kindergarten through 12th grade attend more than 131,000 public and private school facilities in the United States, and more than 7 million teachers and others work in those schools."

Older schools, built before the 1980s, pose the biggest threat. The OIG reports that "asbestos in older schools can be commonly found in vinyl floor tiles, vinyl sheet flooring, and adhesives; textured paint and patching compounds used on walls and ceilings; and insulation on hot water and steam pipes." Students and school staff members can be exposed to asbestos when fibers become airborne through "product use, demolition work, building maintenance, and repair and remodeling."

For example, in 2023, four Philadelphia schools faced closures due to damaged asbestos. According to The Philadelphia Inquirer, "the Philadelphia School District knew about the damaged asbestos at Building 21 since June 2021 'and possibly longer,' according to Superintendent Tony B. Watlington Sr. — but did nothing," due to underfunding of the district.

In New Jersey, nearly 300 students will have to start school elsewhere at the start of 2023 after the ceiling collapsed. They expect a 16-week clean-up, but the school is closed indefinitely.

In 2014, the Ocean View School District in Orange County, Calif., was forced to close three campuses after test results found asbestos in several classrooms.

Over the years, schools have been shut down in Ohio, Virginia, Minnesota, Idaho, and California due to asbestos, just to name a few.

The chlor-alkali industry & asbestos

The chlor-alkali industry is a sector of the chemical industry that produces chlorine and sodium hydroxide (also known as caustic soda), which are manufactured together through the electrolysis of brine (a solution of salt in water). These products are fundamental building blocks in the manufacturing of a vast array of other products. Here's a more detailed look into the sector:

Production Process: The primary production processes in the chlor-alkali industry are:

- Mercury Cell Process (being phased out due to environmental concerns)
- Diaphragm Cell Process which uses asbestos and non-asbestos materials
- Membrane Cell Process (the most modern process and asbestos-free)

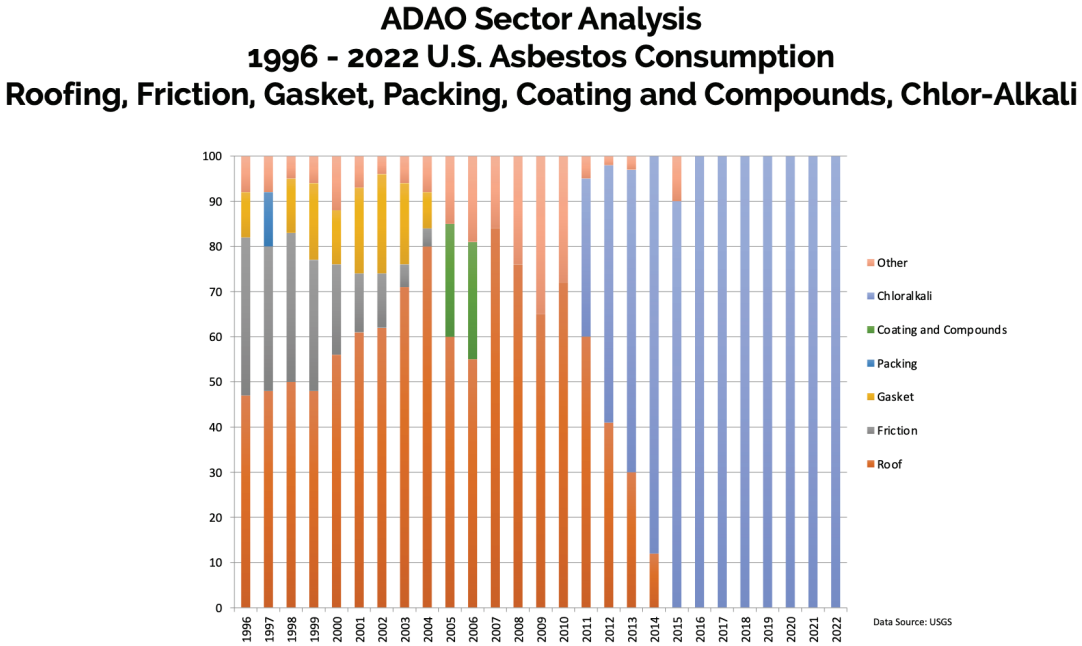
Key Products

- **Chlorine**: Used in the production of a wide range of chemicals, PVC (polyvinyl chloride) for pipes and other products, water purification, and as a bleaching agent in paper and textile industries.
- **Sodium Hydroxide (Caustic Soda)**: Utilized in papermaking, soap production, petroleum refining, and in the manufacture of various chemicals.
- **Hydrogen**: Often used as a fuel, in hydrogenation processes in the food industry, and the production of ammonia for fertilizers.

According to the U.S. Geological Survey (USGS), the chlor-alkali industry is the sole remaining importer and user of raw chrysotile asbestos and uses the asbestos to manufacture nonreactive semipermeable diaphragms.

Using USGS annual reports, in 2012, the chlor-alkali industry became the leading importer of raw chrysotile asbestos. You can see in the graph below that the chlor-alkali industry is now the only industry importing and consuming raw asbestos.

1996 - 2022 Sector Analysis: Asbestos Consumption



In addition to raw asbestos imports for the chlor-alkali industry, EPA reports the importation of asbestos-containing brake blocks for use in the oil industry, preformed gaskets used in the exhaust system of a specific type of utility vehicle, rubber sheets for gasket fabrication (primarily used to create a chemical containment seal in the production of titanium dioxide), and replacement brakes and other friction products for aftermarket vehicle maintenance and repair.

Chlor-Alkali Plants Using Asbestos Diaphragms

Since 1999, the number of chlor-alkali plants using asbestos diaphragms has declined from twenty-three to just eight today. The remaining asbestos-using plants are old, expensive to operate, and produce inferior products compared to modern non-asbestos membrane or diaphragm technology. An economic analysis done by the EPA underscores the availability of environmentally responsible alternatives to asbestos diaphragms, finding that 75% of plants have already converted to non-asbestos technologies.

EPA's Economic Analysis of the TSCA Section 6 Proposed Rule for Asbestos Risk Management, Part 1 April 2022, named three chlor-alkali companies – Occidental Chemical Corporation (OxyChem), Olin Corporation, and Westlake Chemical Corporation – that are importing and using asbestos. Since that report, only OxyChem has continued to import raw asbestos for asbestos diaphragms. Olin and Westlake are no longer importing asbestos but continue to use it. The graph below shows where the plants are and their asbestos diagram output.

Table 2-2: Chlor-Alkali Plants Using Asbestos Diaphragms

Firm	Location	Year Built	Cell Type	Estimated 2021 Asbestos Diaphragm Cell Capacity (1000 m. tons)
Occidental Chemical Corporation	Oxy - Wichita, KS	1952	OxyTech HC3BT, H4 '75 diaphragm	171
	Oxy - Convent, LA	1981	OxyTech MDC55 diaphragm '95	398
	Oxy - Taft (Hanhnville), LA	1966	OxyTech H4 '75 diaphragm	323
	Oxy - Niagara Falls, NY	1898	OxyTech H4 diaphragm '74, '77	170
	Oxy - La Porte (Battleground), TX	1974	OxyTech MDC 29 diaphragm	527
	Oxy - Gregory (Ingleside), TX	1974	OxyTech MDC-55 diaph. 7/98, 12/05	607
Olin Corporation	Olin - Plaquemine, LA	1958	Dow diaphragm	768
	Olin - Freeport, TX	1940	Dow diaphragm	1227
Westlake Chemical Corporation	Westlake - Plaquemine, LA	1975	OxyTech H4 diaphragm '95, '96	427
Total				**4,618**

Years shown in "Cell Type" column indicate addition of production capacity.
Olin has an asbestos diaphragm plant in McIntosh, AL. The company announced in October 2021 that it expects to close that plant by the third quarter of 2022 (Olin Corporation 2021a, Olin Corporation 2021b).
Source: IHS Markit 2020; The Chlorine Institute 2020

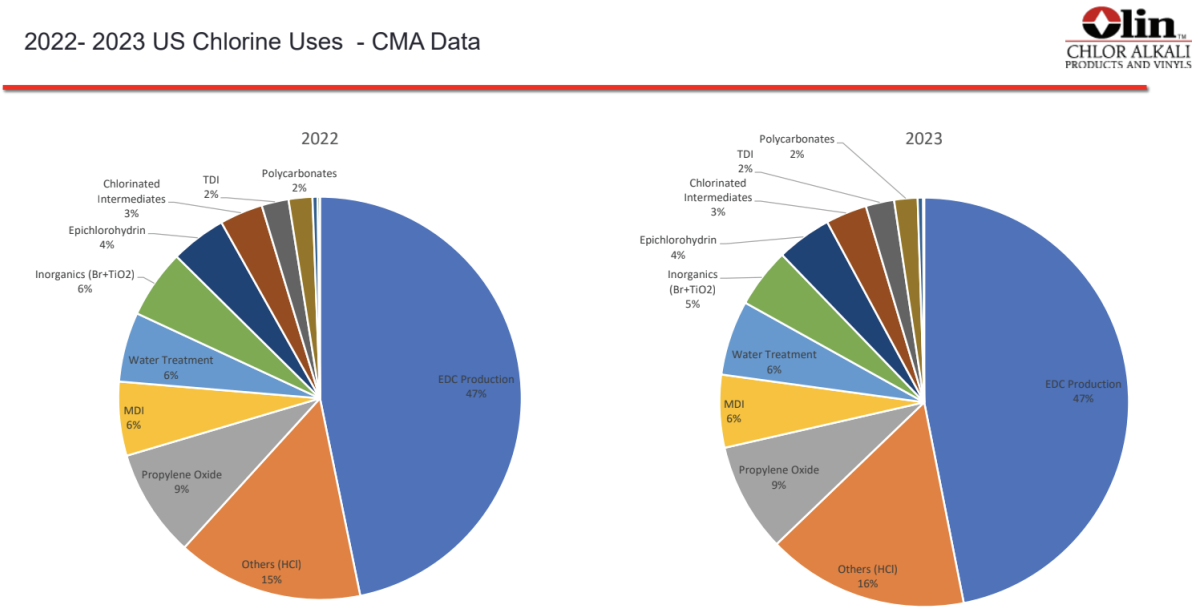
According to a WHO report, "Asbestos Economic Assessment of Bans and Declining Production and Consumption," the "substantial costs associated with the continued use of asbestos potentially outweigh any other economic benefit. The annual global health care costs associated with the health effects of asbestos are estimated to be $2.4–3.9 billion USD, excluding the additional costs of pain, suffering, and welfare losses."

The rest of the world is well ahead of the United States. Non-asbestos technology now accounts for 83 percent of chlor-alkali production worldwide. It is more energy efficient, economically advantageous, and environmentally preferable to the asbestos diaphragm process.

In the United States, only 6 percent of chlorine goes to water purification, while 47 percent is used in ethylene dichloride (EDC), which is used primarily for the production of vinyl chloride monomer (VCM) which is primarily used for the production of PVC.

Based on estimates provided by Olin, these graphs show percentage breakdowns of chlorine production by producer and process and the relative percentages of chlorine output devoted to different uses:

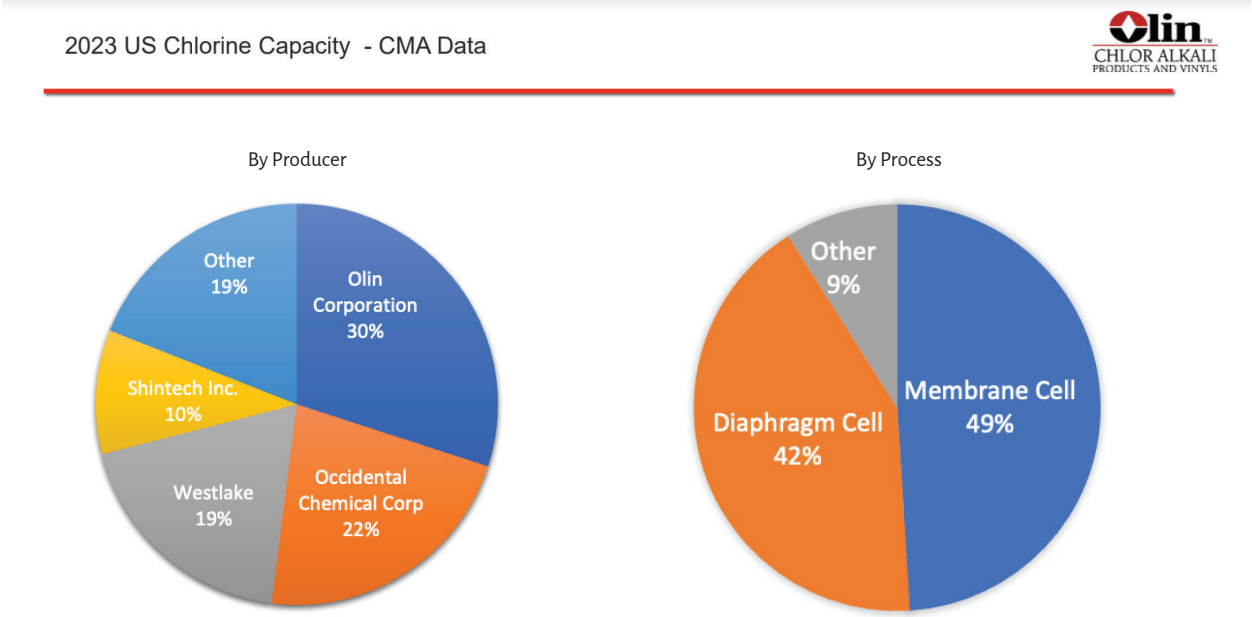
Olin Corporation: The companies and processes behind chlorine capacity in the U.S.



The top five chlor-alkali producers are: Olin Corporation, Occidental Chemical Corp, Westlake, Shintech Inc, and Formosa Plastics Corp. Occidental Chemical Corp is the only company importing raw asbestos. Olin and Westlake no longer import asbestos and are using the remaining stockpile amount while transition to non-asbestos technologies.

According to Olin's chart, 49% of the plants use membrane cells, 42% use diaphragm cells, and 9% use other technology.

Olin Corporation: Chlorine uses in the U.S.



In 2023, Olin estimates chlorine uses to be:

- 47% for EDC Production
- 16% HCl
- 9% Propylene Oxide
- 6% MDI
- 6% Water Treatment
- 16% Other

While conversion to non-asbestos technology would incur capital costs, it would also increase energy efficiency, reduce operational costs, and enable the production of higher-quality caustic soda that would boost revenues, according to the EPA economic analysis.

The EPA's analysis also shows that, under some scenarios, the economic benefits would exceed conversion costs. Thus, the EPA concludes that replacing asbestos diaphragms with non-asbestos technology with no loss of supply is a "high probability."

Companies are already transitioning away from asbestos, with Olin Corporation seeing a significant reduction of its diaphragm-grade chlor-alkali capacity (approximately 1,000,000 tons have been shut down), and conversion is already in process. Occidental Chemical Corp. has also reported that they have closed diaphragm units and are actively converting. However, unlike Olin, they have made no commitment to end their use of asbestos.

Since 2016, the number of plants using asbestos diaphragms has declined from seventeen to eight. According to the Chlorine Institute, 28 membrane cell units have been constructed in the United States, including at some plants that continue to use the asbestos diaphragm process. Only two plants in Western Europe and Canada still use asbestos diaphragms. These plants are mandated to eliminate asbestos by the end of the decade, if not sooner. This massive shift away from asbestos has occurred without shortages of chlorine or supply disruptions, contradicting the doom-and-gloom warnings of the industry.

Olin as an industry leader in asbestos transition

On April 4th, 2022, the Olin Corporation announced a 7-year plan to phase out all asbestos use in their facilities and stated that it was no longer importing asbestos. This announcement is a significant step towards protecting public health and preventing further asbestos exposure and sets a standard that other chlor-alkali companies can and should follow.

In an interview with Inside EPA, Olin CEO Scott Sutton criticized other industry associations' call for a 15-year phase-out. He also strongly supported a ban, saying,

> *"As the largest global and US producer of chlor-alkali, and as the owner of the largest global and US asbestos-based diaphragm chlor-alkali capacity, Olin Corporation would support an EPA action to ban the installation of any new or replacement asbestos-based diaphragms in two years, in combination with an additional five years to operate any existing asbestos-based diaphragm production cells."*

According to ADAO's research and available public documents, Westlake Corporation stopped importing asbestos in late 2016, and Olin Corporation stopped importing asbestos in March 2021.

As of April 2023, OxyChem, remains the only chlor-alkali company importing raw chrysotile asbestos, which it uses in five of its Kansas, Louisiana, and Texas plants. Using U.S. International Trade Commission data from January 2021 to December 2022, OxyChem imported over 400 metric tons of raw chrysotile asbestos from Brazil, China, and Russia.

The ports of entry for the receipt of the raw asbestos were:

- Houston-Galveston, TX
- Los Angeles, CA
- Miami, FL
- New Orleans, LA
- and Norfolk, VA

In the September 2023 letter written to ADAO, Scott Sutton, CEO of Olin, states:

> *"Olin supports an immediate ban on asbestos imports into the United States, which will protect those who may be exposed to this material along the supply chain. Olin will also purge the existing asbestos from our assets within seven years, which is necessary to carry out the extensive work of modifying thousands of individual diaphragm components with new material and to prevent any shortages of critical chlorine in the meantime. Any suggestion by other industry groups or companies that this timeframe is unachievable is simply untrue—Olin has the largest asbestos diaphragm capacity of any producer in the world, and we are confident that this timeline is achievable."*
>
> *Olin Corporation, one of the three remaining users of raw asbestos in the United States, writes to lend our support and formally endorse S.1069, the Alan Reinstein Ban Asbestos Now Act of 2023. As the leader in total U.S. and global chlorine production and the largest U.S. and global producer from the asbestos diaphragm process, we are supporting the end of the use of asbestos in our industry.*
>
> *While the EPA has been evaluating this issue under the Toxic Substances Control Act (TSCA) for the last 7 years, Olin supports a legislative solution that will ensure this issue is addressed without what may amount to another decade of legal challenges and administrative delays. Olin pledges to work closely with you and the Asbestos Disease Awareness Organization (ADAO) and will collaborate and coordinate our efforts to support this legislation and refine it as it moves through the legislative process.*

At ADAO's annual conference held September 2023, Mike Meenan, Olin's Director of Global Government Affairs, joined an impromptu Q&A session to address some frequently asked questions about Olin and the industry's use of asbestos. In his remarks, he stated:

> *"We were very happy and pleased to support S.1069 (Alan Reinstein Ban Asbestos Now Act of 2023)…We are transitioning away from this material. The company is moving in that direction as quickly as we can…We need two years to stop installing new asbestos diaphragms, in line with what the EPA has proposed."*

According to ADAO's research and available public documents, Westlake Corporation stopped importing asbestos in late 2016, and Olin Corporation stopped importing asbestos in March 2021.

Below is an excerpt of our live exchange:

> ***Linda***: *"So how many chlor-alkali companies does the American Chemistry Council represent?"*
> ***Mike Meenan:*** *One. There's one chemical company that ACC represents. It is OXYChem, a subsidiary of Occidental Petroleum. And so any indication that the "industry" supports one thing or the other just isn't accurate. There really are only three, sorta four, chlorine companies left in the United States. Olin is the largest, OXY is the second largest, Westlake is the third. For most it makes a reasonable amount. Um, but only OXY is a member of ACC.*
>
> ***Linda***: *"With the transition to non-asbestos technology, will the water treatment plants have to pay more?"*
> ***Mike***: *"No."*
>
> ***Linda***: *"So next week we are going to have a coalition letter... Who's going to be part of ADAO, IAFF and others?"*
> ***Mike***: *"Olin is going to partner with Linda again. The letter's going to look very similar to the one in your packet but addressed to members of Congress but basically the same letter. And so, we're partners.*

According to InsideEPA, Olin's decision has split the industry.

Maria Hegstad writes for InsideEPA:

> *Sutton's letter comes after he broke with the rest of the chlor-alkali sector earlier this year to support a faster ban on its use of asbestos, though he also told Inside TSCA in an exclusive interview in April that EPA's proposed two-year phaseout -- which the 2023 ARBAN mirrors -- would be "impossible to accomplish" and result in critical shortages of chlorine vital to drinking water treatment.*
>
> *Rather, he wrote to Administrator Michael Regan outlining an alternative seven-year timeline he said Olin would support, dropping the company's previous opposition to eliminating chrysotile asbestos and vowing to back a TSCA rule consistent with Olin's phaseout plan.*
>
> *"As the largest global and US producer of chloralkali, and as the owner of the largest global and US asbestos-based diaphragm chloralkali capacity, Olin Corporation would support an EPA action to ban the installation of any new or replacement asbestos-based diaphragms in two years, in combination with an additional five years to operate any existing asbestos-based diaphragm production cells," Sutton wrote at the time.*
>
> *That letter split the industry; a major trade group representing the other two firms still using asbestos equipment to produce chlorine domestically, OxyChem and Westlake Corporation, continues to argue they must have at least 15 years to complete the transition.*

Asbestos Battles: Regulations, Litigation, and Legislation

REGULATIONS: Implementing the Frank R. Lautenberg Chemical Safety for the 21st Century Act (2016)

Asbestos use falls under the 2016 amendments to the Toxic Substances Control Act of 1976 (TSCA), the federal law that provides EPA with authority to assess and regulate the risks of chemicals to health and the environment. Under the old law, in 1989, EPA issued a rule under section 6(a) of TSCA, prohibiting most asbestos uses. However, following an industry challenge, the rule was overturned in 1991 by the Fifth Circuit Court of Appeals based on limitations in TSCA unrelated to the risks of asbestos.

During the TSCA reform process, there was a bipartisan agreement that asbestos is a poster child for TSCA's failure to protect public health and that any new law needed to ensure that EPA could finally do its job and ban asbestos. After the TSCA amendments were enacted in 2016, many in Congress and the public hoped EPA would use its expanded authority to conduct risk evaluations and regulate unsafe chemicals to reinstate the 1989 asbestos ban.

In December 2016, shortly after the new law's passage, the EPA selected ten chemicals for initial risk evaluations, including asbestos. Under TSCA as amended, if a risk evaluation shows that a chemical presents an unreasonable risk, the EPA must regulate the chemical to eliminate that risk. ADAO and many others hoped the EPA's risk evaluation would lead to a comprehensive asbestos ban.

The Trump EPA issued its Final Risk Evaluation for Asbestos on December 30, 2020. Described by the EPA as a "Part 1" evaluation, it concluded that certain ongoing asbestos uses present an unreasonable risk of injury. However, this evaluation did not address numerous aspects of asbestos exposure and risk. It excluded all asbestos fibers except for chrysotile and did not address the health impacts of legacy asbestos uses and its associated disposal. As a result of these exclusions, a Part 2 evaluation was necessary to determine the risks of these additional sources of exposure.

Following their Part 1 risk evaluation, the EPA proposed a rule for chrysotile asbestos. The proposed rule would prohibit the import, processing, distribution in commerce, and commercial use of chrysotile asbestos to manufacture and use asbestos diaphragms in chlor-alkali production. This prohibition would take effect two years after the final rule's effective date, which is scheduled for January 2024. Importation and use of chrysotile-containing products would terminate in one year.

The EPA states in its proposal, "the proposed rule is expected to generate significant benefits from reduced air pollution associated with electricity generation." These benefits occur because "membrane cells are more energy efficient than diaphragm cells [and] reduce . . . [emissions] of carbon dioxide, particulate matter, sulfur dioxide, and nitrogen oxides." The EPA estimates that "converting asbestos diaphragm cells to membrane cells could yield tens of millions of dollars annually in environmental and health benefits from reduced emissions."

Another benefit of the membrane process and non-asbestos diaphragms is the elimination of the substantial asbestos wastes generated during the use and disposal of asbestos diaphragms and their parts. Currently, landfills receive millions of pounds of 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 under the EPA's rule.

Part I will soon head to the White House Office of Management and Budget (OMB) for interagency review, and EPA is targeting the issuance of a final rule in January 2024. However, the EPA rule will be limited to the chrysotile form of asbestos, meaning it only covers one fiber and six conditions of use. We know that all six asbestos fibers and all conditions of use are carcinogenic, and we must have a ban that covers all of them.

LITIGATION: ADAO v. EPA Cases: Actions and Outcomes to Prevent Asbestos Exposure and Eliminate All Asbestos-Caused Diseases

Over the past four years, ADAO has initiated various lawsuits to hold EPA accountable to protecting our public health. Our legal initiatives stem from TSCA, as discussed above. Represented by Bob Sussman, ADAO and the co-plaintiffs won or favorably settled the following three ADAO v. EPA cases.

2018 -- **ASBESTOS DISEASE AWARENESS ORGANIZATION, et al., v. ANDREW WHEELER, et al.**
Case 3:19-cv-00871 (ADAO)
Case No. 19-cv-00871-EMC
Section 21 of TSCA
Require reporting on asbestos use and exposure under EPA's Chemical Data Reporting (CDR) rule.

2021 -- **ASBESTOS DISEASE AWARENESS ORGANIZATION et al., v. MICHAEL REGAN, , et al.**
(Case 3:21-cv-03716 Filed 05/18/21)
Section 20 of TSCA
Compel EPA to perform their nondiscretionary duty to address the use and disposal of "legacy" asbestos in EPA's risk evaluation for asbestos under TSCA.

2021 -- **ASBESTOS DISEASE AWARENESS ORGANIZATION, et. al, v MICHAEL REGAN1, et. al.**
Case: 21-70160
Section 19 of TSCA
Seek review of deficiencies in final Risk Evaluation for Asbestos, Part 1: Chrysotile Asbestos.

LEGISLATION: The Alan Reinstein Ban Asbestos Now Act (ARBAN)

Since 2016, Congress has introduced nine Alan Reinstein Ban Asbestos Now (ARBAN) Acts, four in the House and five in the Senate. The commercial asbestos ban bill would amend the Toxic Substances Control Act and not impact cosmetic talc litigation.

The bicameral ARBAN Act was introduced and voted out of the U.S. House of Representatives Committee on Energy and Commerce with a strong bipartisan margin of 47-1 on November 19, 2019. The legislation would have amended the Toxic Substances Control Act, which doesn't deal with the cosmetic uses of asbestos being challenged in court. Regretfully, trade associations prevented the bill from moving to the House floor for a vote.

In June 2022, ADAO testified before the U.S. Senate Committee on Environment and Public Works during the "Ban Asbestos Now: Taking Action To Save Lives And Livelihoods" Hearing.

Most recently, the Alan Reinstein Ban Asbestos Now (ARBAN) Act of 2023 was reintroduced by Sen. Jeff Merkley and Rep. Suzanne Bonamici (S.1069 and H.R.2402) on March 30th, 2023.

On September 18, 2023, Senator Jeff Merkley posted a video on social media urging his colleagues to join him in passing ARBAN, saying, "There is no excuse for putting profits over public health. We need to pass this bill and ban asbestos once and for all."

The most comprehensive ban bill put before Congress in nearly 30 years, ARBAN would accomplish three critical public health objectives:

1. Ban the importation and commercial use of all six asbestos fibers (chrysotile, crocidolite (riebeckite), amosite (cummingtonite-grunerite), anthophyllite, tremolite, and actinolite) as well as Libby Amphibole, winchite, and richerite, in all uses.
2. Require chlor-alkali plants currently using asbestos diaphragms to eliminate the use of asbestos and convert to non-asbestos technology in two years.
3. Develop an educational outreach program to support full compliance with ARBAN.

With a ban by Congress, ARBAN will avoid time-consuming and unproductive litigation over the EPA's pending rulemaking and prevent delays in protecting Americans at risk from asbestos exposure.

While the FDA has jurisdiction over personal care products and cosmetics, the Environmental Protection Agency (EPA) has jurisdiction over chemicals. Both agencies are focused on asbestos risk management. Meanwhile, the 2022 Omnibus bill, which included the "Modernization of Cosmetics Regulation Act (MOCRA)", removes any unnecessary concerns about ARBAN — an amendment to the Environmental Protection Agency's (EPA) Toxic Substances Control Act (TSCA) — impacting cosmetic and personal product talc litigation.

Early 2023 ARBAN Supporters Include:

- American Cancer Society Cancer Action Network
- American Federation of State, County and Municipal Employees
- American Public Health Association
- Asbestos Disease Awareness Organization
- Center for Environmental Health
- Collegium Ramazzini
- ConnectiCOSH
- Environmental Information Association
- Environmental Working Group
- GO2 Foundation for Lung Cancer
- International Association of Firefighters
- Massachusetts Coalition for Occupational Safety and Health
- National Council for Occupational Safety and Health
- Natural Resources Defense Council
- Occupational Knowledge International
- Olin Corporation

Early 2023 ARBAN Supporters (*continued*):

- PHILAPOSH
- Rutgers School of Public Health
- Safer Chemicals, Healthy Families
- SafeWork Washington
- Toxic-Free Future
- United Mine Workers of America

As of September 26, 2023 ARBAN Sponsors and Bipartisan Cosponsors Include: Rep. Suzanne Bonamici (Sponsor), Rep. Steve Cohen, Rep. Debbie Dingell, Rep. Eleanor Norton, Rep. Sheila Jackson Lee, Rep. Raúl M. Grijalva, Rep. Jesus G. "Chuy" Garcia, Rep. Betty McCollum, Rep. Paul Tonko, Rep. Julia Brownley, Rep. Gerald E. Connolly, Rep. Nikki Budzinski, Rep. James P. McGovern, Rep. Chellie Pingree, Rep. Dina Titus, Rep. David J. Trone, Rep. Mike Levin, Rep. Daniel S. Goldman, Rep. Jerrold Nadler, Rep. Josh Gottheimer, Rep. Joe Neguse, Rep. Mary Sattler Peltola, Rep. Don Bacon, Sen. Jeff Merkley (Sponsor) and Sen. Jon Tester.

Conclusion

The chlor-alkali industry has already largely transitioned away from asbestos. The remaining asbestos-using plants are outdated and hazardous. Safer, more efficient non-asbestos technology is readily available to complete the industry's transition. The public health benefits of removing this deadly carcinogen from commerce in the United States overwhelmingly justify a ban. Congress should pass the bipartisan Alan Reinstein Ban Asbestos Now Act to end the senseless and preventable deaths of nearly 40,000 Americans each year from toxic asbestos.