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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. Alarmingly, 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.[1] 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

[1] 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 richerite, 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)[2], the Occupational Safety and Health Administration (OSHA)[3], the Department of Health and Human Services,[4] the National Institute for Occupational Safety and Health (NIOSH)[5], the World Health Organization (WHO)[6] 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.[7] 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."[8]

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:

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[2] http://monographs.iarc.fr/ENG/Monographs/vol100C/mono100C.pdf.

[3] https://www.osha.gov/laws-regs/federalregister/1994-08-10

[4] https://ntp.niehs.nih.gov/ntp/roc/content/profiles/asbestos.pdf

[5] https://www.cdc.gov/niosh/docs/2011-159/pdfs/2011-159.pdf

[6] https://monographs.iarc.fr/wp-content/uploads/2018/06/mono100C-11.pdf

[7] https://www.who.int/ipcs/assessment/public_health/Elimination_asbestos-related_diseases_EN.pdf

[8] 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.[9]

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.[10]

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.[11] 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.[12]

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."[13]

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.

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[9] https://www.who.int/ipcs/assessment/public_health/chrysotile_asbestos_summary.pdf

[10] http://monographs.iarc.fr/ENG/Monographs/vol100C/mono100C.pdf

[11] https://www.atsdr.cdc.gov/csem/csem.asp?csem=29&po=6

[12] https://www.osha.gov/Publications/OSHA3507.pdf

[13] 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):[14]

- 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.[15] 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.[16]

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.[17] 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."[18]

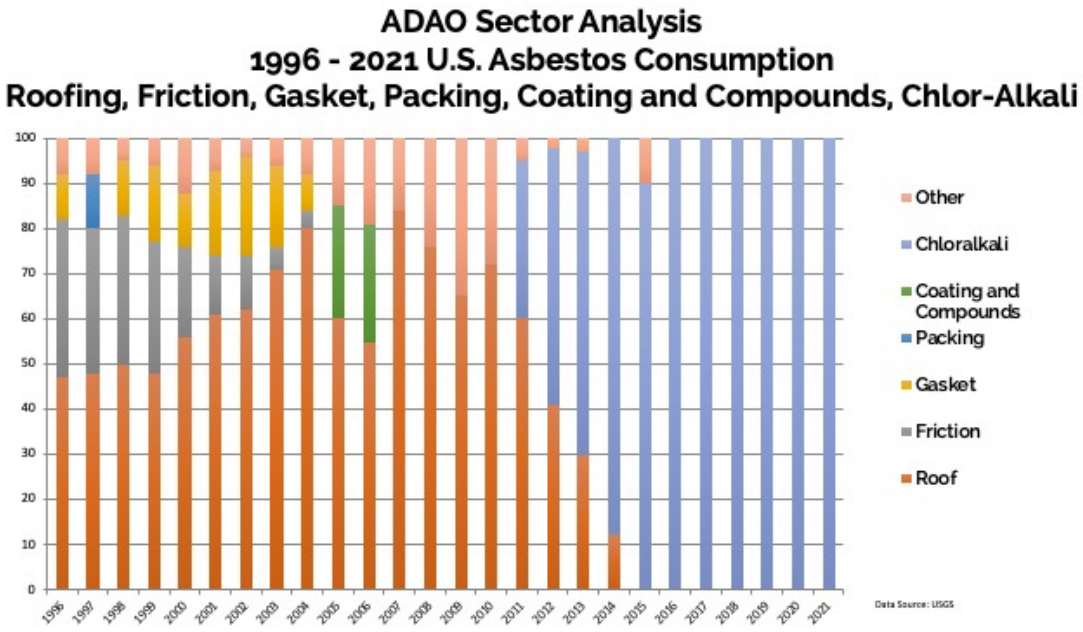
[14] https://www.usgs.gov/centers/national-minerals-information-center/historical-statistics-mineral-and-material-commodities.

[15] https://www.epa.gov/asbestos/asbestos-ban-and-phase-out-federal-register-notices

[16] https://law.justia.com/cases/federal/appellate-courts/F2/947/1201/153685/

[17] http://www.ibasecretariat.org/alpha_ban_list.php

[18] 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.[19]

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,

[19]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.[20]

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

[20] 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.

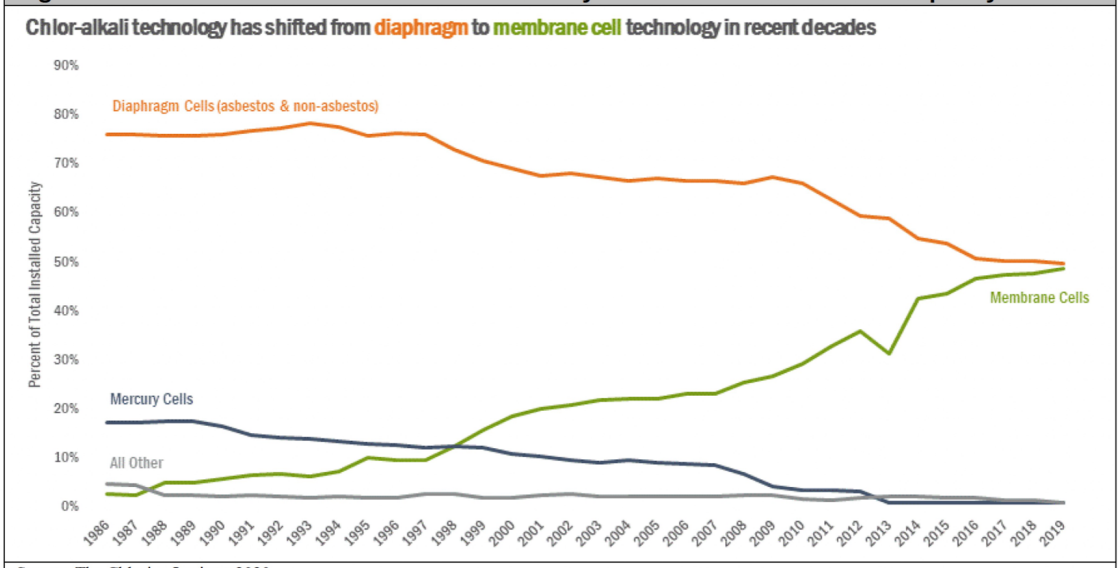
The Chlor-alkali Industry Has Moved Away from the Dangerous and Outmoded Asbestos Diaphragm Process to Cost-effective and Proven Non-Asbestos Production Methods

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..[21] 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:

EPA ASBESTOS PART 1 CHRYSOTILE ASBESTOS ECONOMIC ANALYSIS

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



Source: The Chlorine Institute 2020

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).

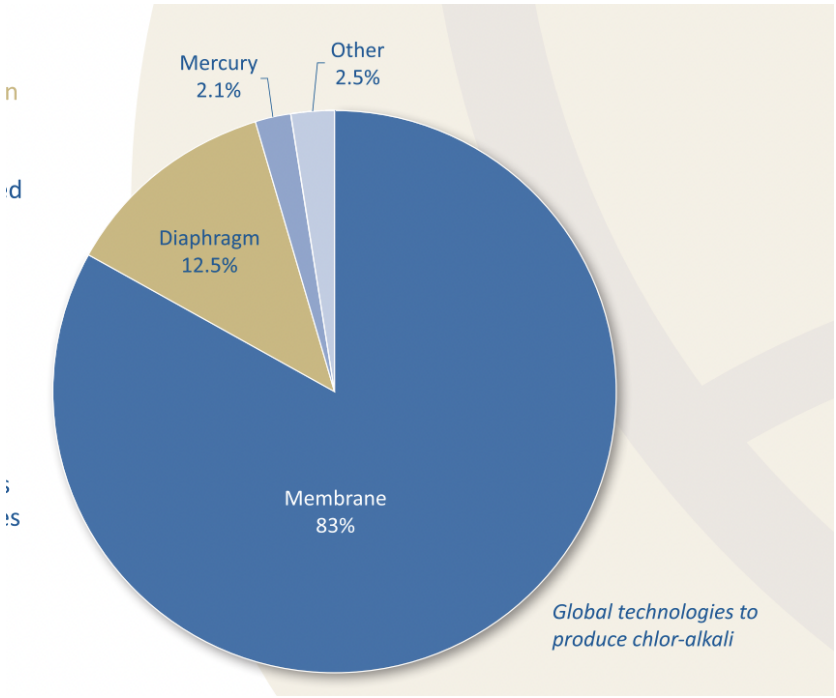
The industry has previously reported that plants using the asbestos diaphragm process account for 33 percent of US production of caustic soda and chlorine while membrane cell and non-asbestos diaphragm technologies contribute the remaining 66 percent. However, the closure of over half of the asbestos-using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

[21] 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.[22] 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.

[22] 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

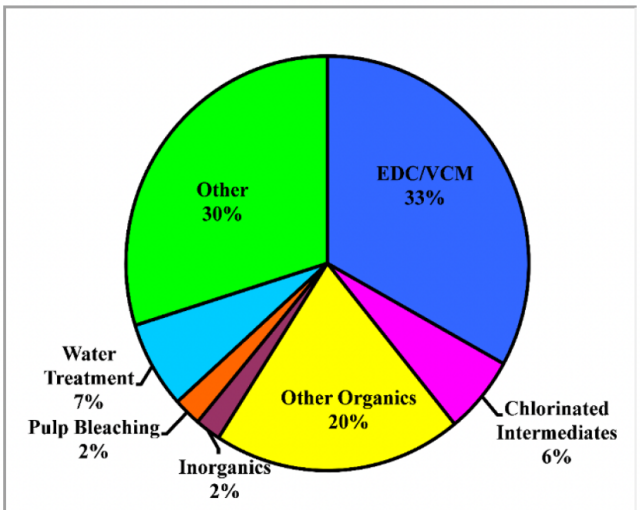


Fig. 1. End uses for chlorine (2013).

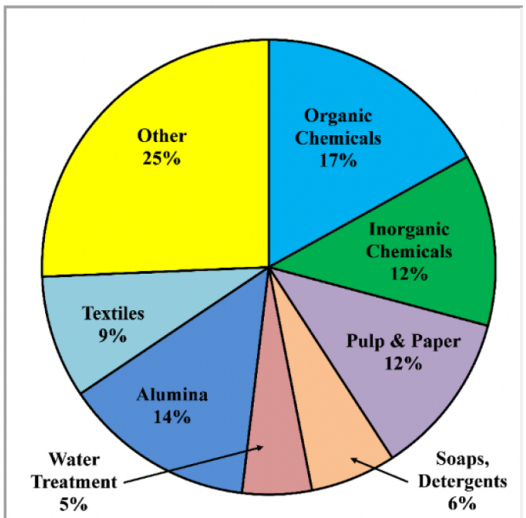


Fig. 2 End uses for caustic soda (2013).

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

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)[23], 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 richerite, 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,

[23] 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

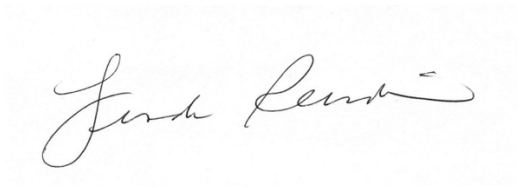
We appreciate the Committee's leadership in holding this important hearing and the support that Senator Merkley and his Senate colleagues welcome the support that many House members have voiced for this vital legislation. On behalf of ADAO and the thousands of American families that have lost loved ones 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,



Linda Reinstein
President and Cofounder, Asbestos Disease Awareness Organization