



Discussion

An urgent call to action: The absolute necessity to ban asbestos production and sales

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ABSTRACT

The issue with asbestos highlights the shortcomings in the global management of health policies for dangerous substances. The perils of asbestos dust were identified about a century ago. A significant number of individuals succumb to asbestos-related diseases worldwide annually. A considerable portion of occupational cancer fatalities are believed to be due to asbestos. A large population across the globe is exposed to asbestos in their workplaces. To address issues like asbestos, it is crucial for policymakers to prioritize public interest, and third parties should actively participate in scrutinizing the actions of these policymakers.

1. Introduction

Even though the perils of asbestos are well-known, this hazardous material continues to pose a significant health risk worldwide, resulting in a substantial number of fatalities each year and accounting for a considerable proportion of all occupational cancer deaths (Whitmer, 2021). Exposure to asbestos affects 125 million workers globally, resulting in significant economic losses (Allen et al., 2018). This paper explores why asbestos has not been banned and potential solutions, highlighting the failure of health policy governance and the significant global medical costs of asbestos-related diseases.

While the primary motivation for governments in shaping asbestos policy tends to be the avoidance of economic costs, it's important to note that neglecting asbestos issues in the early stages can lead to significant economic losses. Policymakers should be cognizant of the substantial costs associated with a failure in initial asbestos management. However, the problem with asbestos is solvable air pollution.

The crux of the issue lies in the political and economic dilemma that some countries may face when considering a ban on asbestos. We lack control over the policies of nations that profit from asbestos production and sales. For instance, Poland reaps benefits from coal production and burning, despite the annual death toll of 50,000 due to smog and air pollution (Duda et al., 2020). This scenario of societal groups profiting at the expense of public health is a political and economic issue, not a knowledge gap about asbestos's harmful effects. Theoretically, this can be addressed by scrutinizing political agendas and making informed choices during elections.

When airborne asbestos is inhaled, its tiny fibers enter the air passages. Although the body's natural defenses remove most of these fibers, some may bypass these defenses and become lodged deep within the lungs. These fibers can remain in place for a long time and may never be removed.

The inhalation of asbestos fibers causes disorders of the lung and pleura. Asbestos-related diseases include non-malignant disorders such as asbestosis, diffuse pleural thickening, pleural plaques, pleural effusion, rounded atelectasis and malignancies such as lung cancer and malignant mesothelioma.

Ingested asbestos in filtered beer was reported (Fitzgerald et al., 2019). We have been neglecting dangerous materials including asbestos (Takefuji, 2018). The role of medicine should strongly influence the health policy on dangerous materials. The primary role of medicine is to treat the diseases. The role of medicine must include prevention of diseases.

2. Asbestos policies at UK, EU, Japan, US, Canada, New Zealand and South Korea

Although the first medical article on the hazards of asbestos dust was published in 1924 (Bartrip, 2014; Laurie, 2000), it took more than 75 years to end asbestos in the UK. The use of asbestos in the UK officially ceased on August 24, 1999, which was a significant milestone considering the first documented death due to asbestos occurred in 1906. This ban came into effect just a month after the European Union (EU) prohibited the use of chrysotile (Bartrip, 2014; Laurie, 2000).

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Developed countries including US and Japan postponed the asbestos problems. A true total ban of asbestos in Japan was achieved in 2012 (Furuya et al., 2017). The Environmental Protection Agency (EPA) in US has no general ban on the use of asbestos (Gerry, 2018). Despite asbestos risks, roughly 125 million people worldwide are exposed to asbestos while at work: shipbuilders, miners, electricians, and other blue-collar workers are at particularly high risk (Gerry, 2018). In response, over 50 countries have banned all future uses of asbestos (Gerry, 2018). However, lawmakers in the US have been unable or unwilling to draft legislation strong enough to withstand challenges from lobbyists for the asbestos industry (Gerry, 2018).

The Canadian government finally announced asbestos ban with exemptions which would be effective from Dec. 30 in, 2018 (Povtak, 2018). In 2016 asbestos was banned in New Zealand. In 2009, asbestos was finally banned in South Korea from grassroots (Yoon et al., 2018).

According to the World Health Organization (WHO), approximately 125 million individuals globally are exposed to asbestos in their workplaces where it is estimated that asbestos is responsible for nearly half of all occupational cancer fatalities (WHO, 2018). This fact shows that WHO did not fulfill the role of the world health organization.

3. Airborne concentration density

The fundamental issue with asbestos is that the current approach primarily focuses on managing the problem after it has already occurred. This reactive strategy does not always include measures to monitor airborne concentration density, often due to economic constraints. Therefore, each of governments has their own regulations. For example, according to Occupational Safety and Health Administration in the US (OSHA.GOV, 2023), Permissible Exposure Limit (PEL) for asbestos is 0.1 fiber per cubic centimeter of air as an eight-hour time-weighted average (TWA), with an excursion limit (EL) of 1.0 asbestos fibers per cubic centimeter over a 30-min period. The employer must ensure that no one is exposed above these limits.

The role of medicine must include prevention against causing diseases. We should not repeat the similar tragedy like asbestos. The role of medicine should quickly and strongly influence the global health policy on dangerous materials including asbestos in order to remove them from our society in the world. The strong public support is needed to outperform money and lobbyists in activating the global health policy.

Industry, lobbyists, and scientists.

Favaro clearly stated that scientists cannot compete as lobbyists (Favaro, 2012). This is because lobbying takes time and money. In his study, more than US\$3.5 billion was spent in 2010 on lobbying US Congress members alone (Favaro, 2012). Academic scientists can hardly compete on this scale.

Lobbying Industry surpassed \$3.7 billion for first time; 3700 companies and organizations hired new lobbyists since start of pandemic (O'Connell and Narayanswamy, 2022). The lobbying industry had its best year ever in 2021, generating \$3.7 billion in revenue as companies, groups, and other organizations pressured congress and the Biden administration over trillions in new pandemic spending and rules affecting industries like healthcare, travel, and tourism (O'Connell and Narayanswamy, 2022).

Frankenfield investigated the relationship between industry and lobbyists where the pharmaceutical and health food industry has spent the most on lobbying in the past 24 years: \$5.17 billion over the past 24 years (Frankenfield, 2022).

However, Ruff reported the success story in Canada (Ruff, 2017). Ruff examined how an international solidarity campaign involving scientists, asbestos victims, and health activists from Quebec, Canada, and abroad succeeded in closing two mines and defeating the political and social power exercised by the Quebec asbestos industry for a century (Ruff, 2017).

The successful policy changes observed in countries like Canada and South Korea are fundamentally rooted in the public disclosure of the

issue. Policymakers must be independent of specific lobbyists to prioritize the public interest for wise decision. In order to prioritize the public interest, policymakers must be closely monitored by a third-party organization with the international solidarity campaign involving scientists. A team of the third-party organization must be created with complementary skills to achieve the best performance to make successful decisions (Katzenbach and Smith, 1993; Xie et al., 2016; Topp et al., 2018). By complementing each other, they can enhance their individual abilities without clashing, and thus make successful decisions.

4. Public disclosure on asbestos issues

The issue of lobbying and manufacturing, coupled with the lack of sufficient resistance from the scientific and medical communities, hinders the exertion of effective pressure on decision-making centers. The problem with asbestos is indeed more extensive. However, Retraction Watch has highlighted that scientists were demanding the withdrawal of papers tied to the asbestos industry, which they deem to be 'seriously misleading' (Oransky, 2022).

The most compelling success stories often emerge from third-party public disclosures of the issue. Oransky introduced a successful international volunteer project called Retraction Watch (Oransky, 2022). Retraction Watch is to track retractions as a window into the scientific process for scientific integrity. Retraction Watch serves as a pivotal platform for public disclosure concerning issues related to asbestos. A study asserting that the exposure to asbestos-containing roofing materials was within safe parameters had to be retracted due to backlash over the approving editor's ties with the asbestos industry (Cherla et al., 2019; Retraction Watch, 2016). In the Viox litigation, plaintiff lawyers received approximately US\$1.5 billion, which is 32 % of the US\$4.85 billion settlement (Mebane et al., 2019).

Similarly, in successful asbestos litigation, only 37 % of the payouts went to the victims on average. The potential for enormous payouts in toxic tort cases presents significant incentives for biased science, given the associated allure and risks (Mebane et al., 2019). However, Retraction Watch has advocated for public disclosure on asbestos in an effort to mitigate bias in scientific studies (NIH.GOV, 2015; NIH.GOV, 2018). A new political institution like Retraction Watch should be strengthened to serve as a third party for asbestos.

5. Overview of asbestos management and its challenges

The EPA posted a final rule on asbestos entitled "Restrictions on Discontinued Uses of Asbestos; Significant New Use Rule" on June 24, 2019 (EPA, 2019). Under the Toxic Substances Control Act (TSCA), EPA is promulgating a rule to ensure that any discontinued uses of asbestos cannot re-enter the marketplace without EPA review, closing a loophole in the regulatory regime for asbestos.

All policy decisions must be clear and understandable to the uninitiated, and the reasons for decisions based on rational, reasoned scientific evidence must be made public. The early neglect by policymakers of hazardous materials such as asbestos has led to health problems on a global level. In other words, without scientific evaluation, only prioritized economic policies can cause economic losses worldwide.

Since WHO does not have sufficient enforcement power, countries must successfully organize scientific teams to mitigate all risks of hazardous materials. Make sure that a team should be organized with mutually complementary skills to achieve the best performance to make successful decisions.

A crucial aspect often overlooked is the necessity of utilizing old buildings containing asbestos due to a shortage of new, asbestos-free structures. Additionally, the quality and efficiency of demolition work in countries that prohibit asbestos in new buildings is another factor to consider. The environmental impact of improperly executed work, including the safety and location of landfill sites, cannot be ignored.

Furthermore, the issue of Naturally Occurring Asbestos (NOAs) and

Anthropogenic Asbestos (AOAs) from dust emissions in post-mining and anthropopressed areas is related. The uncontrolled destruction and emission of asbestos products incorporated in buildings due to disasters such as earthquakes, fires, and tsunamis is another significant concern.

Recently, the European Parliament has been discussing a further reduction of the Permissible Exposure Limit (PEL) or Occupational Exposure Limit (OEL) for workers, proposing to lower the value to 0.01 f/cm³. When the issue of lacking an appropriate limit value for indoor air pollution during the use of buildings containing asbestos or after its removal was raised, it was decided that this should be addressed through individual national regulations. However, it's worth noting that the users of buildings with asbestos far outnumber the contractors.

Asbestos use continues in low- and middle-income countries, with China and India estimated to consume more than half of the world's asbestos supply (Brims, 2021). Erionite is a highly carcinogenic elongate mineral particle that has caused malignant mesothelioma outbreaks in Turkey and Mexico (Berry et al., 2022).

6. Conclusion

Our initial management of asbestos failed due to the neglect of asbestos-related issues in the early stages, leading to significant economic losses. The fundamental problem with asbestos is that our current approach is primarily reactive, focusing on managing the problem after it has already occurred. This strategy often overlooks the need for measures to monitor airborne concentration density, which could potentially reduce asbestos-related deaths. Public disclosures on asbestos by third parties, such as Retraction Watch, can significantly enhance public support and play a pivotal role in bolstering the management of asbestos. Middle and low-income countries can play a key role in resolving the asbestos problems.

Research involving human participants and/or animals

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Informed consent

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Data availability

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References

Allen, L.P., Baez, J., Stern, M., Takahashi, K., George, F., 2018. Trends and the economic effect of asbestos bans and decline in asbestos consumption and production

- worldwide. *Int. J. Environ. Res. Public Health* 15 (3), 531. <https://doi.org/10.3390/ijerph15030531>.
- Bartrip, P.W.J., 2014. History of asbestos related disease. *Postgrad. Med. J.* 80, 72–76.
- Berry, T.A., Belluso, E., Vigliaturo, R., Gieré, R., Emmett, E.A., Testa, J.R., Steinhorn, G., Wallis, S.L., 2022. Asbestos and other hazardous fibrous minerals: potential exposure pathways and associated health risks. *Int. J. Environ. Res. Public Health* 19 (7), 4031. <https://doi.org/10.3390/ijerph19074031>.
- Brims, F., 2021. Epidemiology and clinical aspects of malignant pleural mesothelioma. *Cancers* 13 (16), 4194. <https://doi.org/10.3390/cancers13164194>.
- Cherla, D.V., Viso, C.P., Holihan, J.L., Bernardi, K., Moses, M.L., Mueck, K.M., Olavarria, O.A., Flores-Gonzalez, J.R., Balentine, C.J., Ko, T.C., Adams, S.D., Pedroza, C., Kao, L.S., Liang, M.K., 2019. The effect of financial conflict of interest, disclosure status, and relevance on medical research from the United States. *J. Gen. Intern. Med.* 34 (3), 429–434. <https://doi.org/10.1007/s11606-018-4784-0>.
- Duda, H., Rydzik, L., Czarny, W., Blach, W., Görner, K., Ambroży, T., 2020. Reaction of the organisms of young football players to city smog in the sports training. *Int. J. Environ. Res. Public Health* 17 (15), 5510. <https://doi.org/10.3390/ijerph17155510>.
- EPA, 2019. Restrictions on discontinued uses of asbestos; significant new use rule. <http://www.regulations.gov/document/EPA-HQ-OPPT-2018-0159-5897>.
- Favaro, B., 2012. Scientists cannot compete as lobbyists. *Nature* 482, 162. <https://doi.org/10.1038/482162b>.
- Fitzgerald, R.C., et al., 2019. Ingested asbestos in filtered beer, in addition to occupational exposure, as a causative factor in oesophageal adenocarcinoma. *Br. J. Cancer* 120, 1099–1104.
- Frankenfield, J., 2022. Which industry spends the most on lobbying? <https://www.investopedia.com/investing/which-industry-spends-most-lobbying-antm-so/>.
- Furuya, S., et al., 2017. Experience of Japan in achieving a total ban on asbestos. *Int. J. Environ. Res. Public Health* 14 (10), 1261.
- Gerry, C., 2018. When politics trumps science: why asbestos is still legal in the USA. <http://sitn.hms.harvard.edu/flash/2018/asbestos-still-legal-usa/>.
- Katzenbach, J.R., Smith, D.K., 1993. The discipline of teams. In: March–April 1993 Issue of Harvard Business Review. <https://hbr.org/1993/03/the-discipline-of-teams-2>.
- Laurie, K.A., 2000. Asbestos finally banned in the United Kingdom. http://www.ibasecretariat.org/lka_uk_ban.php.
- Mebane, C.A., Sumpter, J.P., Fairbrother, A., Augspurger, T.P., Canfield, T.J., Goodfellow, W.L., Guiney, P.D., LeHuray, A., Maltby, L., Mayfield, D.B., McLaughlin, M.J., Ortego, L.S., Schlekot, T., Scroggins, R.P., Verslycke, T.A., 2019. Scientific integrity issues in environmental toxicology and chemistry: improving research reproducibility, credibility, and transparency. *Integr. Environ. Assess. Manag.* 15 (3), 320–344. <https://doi.org/10.1002/ieam.4119>.
- NIH.GOV, 2015. Freedom of information act on asbestos. <https://www.nih.gov/sites/default/files/institutes/foia/2015-foia-log.pdf>.
- NIH.GOV, 2018. Freedom of information act on asbestos. <https://www.nih.gov/sites/default/files/institutes/foia/foia-log-oct-july-2018.pdf>.
- O'Connell, J., Narayanswamy, A., 2022. Lobbying broke all-time mark in 2021 amid flurry of government spending. <https://www.washingtonpost.com/business/2022/03/12/lobbying-record-government-spending/>.
- Oransky, I., 2022. Retractions are increasing, but not enough. *Nature* 608 (7921), 9. <https://doi.org/10.1038/d41586-022-02071-6>.
- OSHA.GOV, 2023. OSHA fact sheet: asbestos. <https://www.osha.gov/sites/default/files/publications/OSHA3507.pdf>.
- Povtak, T., 2018. Canada announces asbestos ban with exemptions. <https://www.asbestos.com/news/2018/10/22/canada-asbestos-ban-exemptions/>.
- Retraction Watch, 2016. A journal said it would retract a paper about asbestos—now it's "withdrawn" [Internet]. Available from: <http://retractionwatch.com/category/by-reason-for-retraction/failure-to-disclose-coi>.
- Ruff, K., 2017. How Canada's asbestos industry was defeated in Quebec. *New Solut.* 26 (4), 543–556. <https://doi.org/10.1177/1048291116679951>.
- Takefuji, Y., 2018. Dynamic guidance plays a key role in evaluating the safety of toxic chemicals. *Science* (eLetter, 19 August 2018). <http://science.sciencemag.org/content/361/6403/631/tab-e-letters>.
- Topp, L., Mair, D., Smillie, L., et al., 2018. Knowledge management for policy impact: the case of the European Commission's Joint Research Centre. *Palgrave Commun.* 4, 87 (2018). <https://doi.org/10.1057/s41599-018-0143-3>.
- Whitmer, M., 2021. Asbestos facts & statistics. <https://www.asbestos.com/asbestos/statistics-facts/>.
- WHO, 2018. Asbestos: elimination of asbestos-related diseases. <https://www.who.int/news-room/fact-sheets/detail/asbestos-elimination-of-asbestos-related-diseases>.
- Xie, W.J., Li, M.X., Jiang, Z.Q., et al., 2016. Skill complementarity enhances heterophily in collaboration networks. *Sci. Rep.* 6, 18727 (2016). <https://doi.org/10.1038/srep18727>.
- Yoon, Y.R., Kwak, K.M., Choi, Y., Youn, K., Bahk, J., Kang, D.M., Paek, D., 2018. The asbestos ban in Korea from a grassroots perspective: why did it occur? *Int. J. Environ. Res. Public Health* 15 (2), 198. <https://doi.org/10.3390/ijerph15020198>. Jan 25. PMID: 29370079; PMCID: PMC5858267.