

VIEWPOINT

High Time for Complete Ban on Asbestos Use in Developing Countries

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Considerable evidence has indicated that all forms of asbestos are carcinogenic to humans. Long-term exposure to asbestos is associated with the incidence of malignant pleural mesothelioma, which is a rare but highly aggressive cancer with a poor prognosis. Most mesotheliomas occur in the pleura and peritoneum. Because the latency period can be 20 to 50 years, the incidence of mesothelioma dramatically increases after asbestos exposure, even if the usage is completely prohibited.¹ According to the World Health Organization (WHO), approximately 125 million people worldwide are exposed to asbestos at their workplaces, and more than 107 000 workers die from asbestos-related diseases annually. In addition, thousands of deaths are attributed to asbestos exposure in homes.²

The International Mesothelioma Interest Group conducts meetings biennially. The group's 14th meeting was held on May 2-5, 2018, in Ottawa, Ontario, Canada. More than 500 scientists and clinicians attended this conference from all over the world. Chinese delegates from the mainland and Taiwan, and working overseas (including all of us) discussed the current status of asbestos use and exposure in fast-developing countries, such as Brazil, Russia, India, and China. We predicted that these countries face an impending public health crisis of an unprecedented scale triggered by the use of asbestos.

Current Situation Worldwide

Although many countries have either reduced or banned asbestos mining and use, some countries continue to produce and/or consume asbestos. Statistics show that both asbestos production and consumption have declined globally, and the number of countries that have issued bans on asbestos use has increased.³

According to Flanagan,⁴ the estimated global consumption of asbestos in 2016 totaled 1.37 million metric tons. The top 5 countries, including India (308 000 tons), China (288 000 tons), Russia (234 000 tons), Brazil (120 000 tons), and Indonesia (114 000 tons), together accounted for approximately 80% of the global asbestos consumption. As a result, the incidence of asbestos-related diseases, especially malignant mesothelioma, will inevitably increase over time. The estimated global asbestos production in 2016 totaled 1.28 million metric tons. Russia was the largest producer, accounting for more than half (54%) of the global output, followed by Brazil and China (each accounting for approximately 16% of the global total).⁴

Asbestos Exposure in China

Because of rapid industrialization, by 2013 China became the largest asbestos consumer worldwide and ranked second (after India) from 2014 to 2016.⁴

To meet the demand of its construction industry, China imports large quantities of asbestos from Russia. In 2014, China's Ministry of Industry and Information Technology published regulations demanding protective clothing for workers involved in mining and processing chrysotile; however, a complete ban was not issued on the use of chrysotile.⁵ Chrysotile has limited use in Beijing, but remains in common use elsewhere in China.⁶ As expected, the peak of mesothelioma incidence in China shall be reached later than that of many industrialized countries owing to the long latency period after asbestos exposure.⁷

Many Chinese workers in a variety of industries are exposed to asbestos at their workplaces. Asbestos exposure in China usually occurs at major construction or reconstruction (including the manufacture of building materials) sites and shipyards. People working near boilers and insulation pipes are also often at risk. The families of these workers are equally susceptible because the workers' clothes are also contaminated with asbestos. Information on asbestos exposure is complicated by the use of short-term contractors or temporary workers in commercial and industrial workplaces. Thus, epidemiological data are difficult to gather under such circumstances.

Despite the understanding of the health risks posed by asbestos use, historical records indicate that many companies that used asbestos in their facilities ignored that such materials are dangerous and continued to use asbestos-containing materials. China is currently the second-largest consumer and producer of chrysotile asbestos worldwide.⁴ Over time, as the experiences of sick employees became known, the Chinese government began to consider implementing laws to regulate the use of asbestos. In the future, China could face a public health crisis triggered by asbestos use.

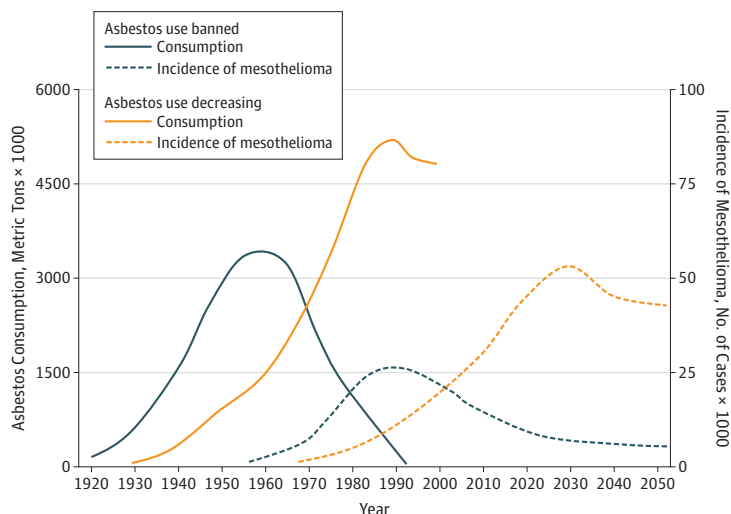
Global Efforts to Ban Asbestos

As early as 2005, the WHO urged its member states to prevent the incidence of mesothelioma and other cancers caused by carcinogen exposure at workplaces and in the environment. By 2007, the World Health Assembly had asked the WHO to launch a global campaign to eliminate asbestos-related diseases, mainly in developing countries that still used a large amount of chrysotile asbestos.

In 2010, the American Public Health Association and the 3 major international health organizations—the World Federation of Public Health Organizations, the International Commission on Occupational Health, and the International Trade Union Confederation—called for a ban on the use of asbestos worldwide.⁸

In 2013, the WHO proposed a global plan for 2013-2020, which described a series of policies and action plans to help the organization's nearly 200 member

Figure. Theoretical Model Depicting the Association of Asbestos Consumption With the Expected Incidence of Malignant Mesothelioma



The blue curves represent countries where asbestos use has been banned, and the orange curves denote the countries where the use is only reduced and a complete ban has not been issued. The solid curves indicate asbestos consumption, and the dashed curves indicate the expected incidence of malignant mesothelioma based on the latency period. The incidence of malignant mesothelioma might have peaked in countries that have banned asbestos use. However, in developing countries, such as Brazil, Russia, India, and China, which are still using large quantities of asbestos, the incidence is expected to increase rapidly in the next decades.

states to reduce the incidence of asbestos-related diseases, especially mesothelioma. Because most countries have banned asbestos use, only a few countries, especially the fast-developing ones, continue to use large quantities of asbestos; therefore, the incidence of mesothelioma is expected to continue to increase over the coming decades even if asbestos use is banned now. Accordingly, we propose a theoretical model to show the potent association of asbestos consumption with the incidence of mesothelioma (Figure).

Summary

Because most countries have banned asbestos use, only few countries, especially Brazil, Russia, India, and China, are still using large quantities of asbestos; among them, China and Russia are the biggest users. As a result, the incidence of asbestos-related diseases, especially malignant mesothelioma, is expected to increase significantly in the next few decades. Therefore, it is high time to completely ban asbestos use in developing countries.

ARTICLE INFORMATION

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