Thorac Res Pract. 2024; 25(3): 100-101 DOI: 10.5152/ThoracResPract.2024.23072

Editorial

The Additional Burden of Earthquakes: Asbestos Risks Rising in Türkiye

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Cite this article as: Yavuz CI. The additional burden of earthquakes: Asbestos risks rising in Türkiye. *Thorac Res Pract.* 2024;25(3):100-101.

Received: *July 11, 2023* ***Revision Requested:*** *September 25, 2023* ***Last Revision Received:*** *December 22, 2023*
Accepted: *January 15, 2024* ***Publication Date:*** *February 8, 2024*

Disaster waste can directly and indirectly threaten public health due to the amount and type of waste generated. These waste materials may contain hazardous substances such as pesticides, solvents, and asbestos fibers.[1] Despite being classified as a natural mineral, asbestos has adverse and unnatural health effects on humans. Exposure to asbestos can result in various health issues, such as asbestosis, pleural plaques, pleural thickening, effusion, and cancer. Based on the evidence, exposure to asbestos has been linked to lung, laryngeal, and ovarian cancer, as well as mesothelioma. The World Health Organization stresses that 125 million individuals are subjected to asbestos in their workplaces.[2]

Asbestos is currently used in over 3000 products, which has led to an increase in the risk of occupational and environmental exposure and in the burden of asbestos-related diseases. According to estimates, the "asbestos cancer epidemic" could cause 10 million deaths globally if preventive regulations about asbestos exposure are not implemented. Due to previous exposure to asbestos, it is anticipated that over 200 000 deaths will occur in Europe in the coming decades as a result of mesothelioma.[3] Asbestos leads to a "mutagenic microenvironment" for tissues in the pleura through various mechanisms, such as BRCA1-associated protein-1 mutations.[4] The long latent period of the disease and the lack of treatment options are the challenges. According to the American Cancer Society, the time span between initial exposure and diagnosis typically ranges from 20 to 50 years.[5]

Non-occupational exposure to asbestos is categorized into 4 main groups: exposure to naturally occurring asbestos areas, exposure in the neighborhood area to industrial and mining sources of asbestos, take-home exposure, and home-related exposure.[6] Since asbestos was used as an isolation material in buildings when it was widely used, maintenance, repair, and demolition operations in old buildings may pose a risk of exposure. In this respect, earthquakes can be considered a way of exposure that has the potential to increase the risk of asbestos due to the debris wastes they generate.

In earthquakes, the waste burden is higher than in other types of disasters, as entire buildings become waste. As buildings collapse or damaged ones are demolished, waste is "trapped" in the collapsed or demolished buildings. This can lead to difficulties in separating hazardous waste (e.g., asbestos) from non-hazardous waste (e.g., general construction waste).[1] As the asbestos added cement and was used in many insulation materials in buildings, there is a risk of asbestos fibers being spread through damaged or collapsed buildings after earthquakes.[7-9] This presents a significant threat to public health, so asbestos removal and the management of earthquake debris are essential.[10] Following the earthquake in Kobe in 1995, it is estimated that about 18 million tons of debris, including 11 million tons of concrete, were generated and 26.4 kg of asbestos was released into the environment. Asbestos fibers were detected in the atmosphere in the earthquake area, and asbestos removal costs accounted for 68-94% of the total waste disposal costs.[11]

The asbestos burden was intensified by the February 6 earthquakes in Türkiye, which killed more than 50 000 people and generated 116-200 million tons of rubble.[12] This large quantity of waste from demolitions presents a risk to public health because of asbestos in old buildings. Although there are legal regulations regarding the separation, collection, and disposal of asbestos-containing waste in disaster preparedness plans, there is no information regarding the effectiveness of these measures in the earthquake zone in Türkiye. This increases uncertainty and can lead to problems in risk communication and increased public anxiety about asbestos-related health problems. By contrast, reports issued by the Chamber of Environmental Engineers have detected asbestos in samples obtained from the earthquake zone in April and September 2023.[13,14]

Despite the fact that asbestos was banned in Türkiye in 2008,[15] asbestos is already on Türkiye's agenda due to shipbreaking activities, naturally occurring areas, and the demolition of old buildings in urban renewal projects. According to the "Türkiye

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Asbestos Control Strategic Plan," over 5000 patients were diagnosed with mesothelioma between 2008 and 2012.[16] With the earthquakes that occurred on February 6, 2023, it is foreseeable that Türkiye's asbestos burden will escalate further. Comprehensive measures should be taken to reduce this burden, and Türkiye, as a country with frequent earthquakes, should improve its waste management capacity in disasters, particularly in disaster preparedness plan activities.

Post-earthquake asbestos risk is an additional occupational and environmental risk that should not be ignored. Waste management should be prioritized in disaster preparedness plans. Otherwise, exposure to asbestos can result in severe health problems that have a prolonged impact.

Peer-review: Externally peer-reviewed.

Declaration of Interests: The author has no conflict of interest to declare.

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