Evaluation of Take Home (Para-Occupational) Exposure to Asbestos and Disease: A Review of The Literature

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Abstract:
The potential for para-occupational (or “take-home”) exposure to a number of chemicals has been recognized for over 60 years. We conducted a literature review in order to characterize reported cases of asbestos-related disease among household contacts of workers occupationally exposed to asbestos. Over 200 published articles were evaluated. Nearly 60 articles described cases of asbestos-related disease thought to be caused by para-occupational exposure. Over 65% of these cases were in persons who lived with workers classified as miners, shipyard workers, insulators, or others involved in the manufacturing of asbestos-containing products, with nearly all remaining workers identified as craftsmen. 98% of the available lung samples of the persons with diseases indicated the presence of amphibole asbestos. Eight studies provided airborne asbestos concentrations during (i) handling of clothing contaminated with asbestos during insulation work or simulated use of friction products; (ii) ambient conditions in the homes of asbestos miners; and (iii) wearing previously contaminated clothing. This review indicates that the literature is dominated by case reports, the majority of which involved household contacts of workers in industries characterized, generally, by high exposures to amphiboles or mixed mineral types. The available data do not implicate chrysotile as a significant cause of disease for household contacts. Also, our analysis indicates that there is insufficient information in the published literature that would allow one to relate airborne asbestos concentrations in a workplace to those that would be generated from subsequent handling of contact with clothing that had been contaminated in that environment. Ideally, a simulation study could be conducted in the future to better understand the relationships between the airborne concentrations in the workplace and the fiber characteristics that influence retention on fabric, as well as the concentrations that can be generated by handling the contaminated clothing by the persons in the home.

Keywords:
Asbestos, para-occupational exposure, take-home exposure, family, fiber transport