Hazards of residential exposure to household asbestos

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Asbestos exposure can cause various cancers and other respiratory diseases.[1] Most of our evidence of disease risk comes from studies of occupational asbestos exposure; however, information is scant on the quantifiable risks and public-health implications arising from in-home exposure to asbestos products (eg, from contaminated loft insulation).[2] The important and thorough study by Rosemary Korda and colleagues, reported in *The Lancet Public Health*,[3] not only provides some new evidence about in-home asbestos exposure but also highlights several important issues about epidemiological investigation and translation.

Among individuals exposed to asbestos at residential properties in the Australian Capital Territory (ACT), Korda and colleagues reported increased incidence of several cancers—eg, colorectal cancer in women (standardised incidence ratio [SIR] 1·72, 95% CI 1·29–2·26) and prostate cancer in men (1·29, 1·07–1·54).[3] However, the chief interest from this study will be in the more than doubling of risk of mesothelioma in men who had lived in an affected house, compared with unexposed males (SIR 2·54, 95% CI 1·02–5·24). It is also worth noting that, in view of the comparatively few person-years of follow-up for women, one case of mesothelioma would have increased the SIR to larger than that reported for men (no cases were reported in exposed females in the study). The background incidence of mesothelioma without exposure to asbestos is very low (highly age-dependent and roughly one case per million person-years),[4] so any rise would be indicative of previous asbestos exposure. Specific to this study set in the ACT, the most common type of asbestos used was amosite, the same fibre that has led to the UK having the current highest incidence of mesothelioma worldwide[5] and in the USA the highest occupational-group incidence.[6]

Australia was an avid producer and consumer of raw asbestos and asbestos cement products and today is left with the legacy of that past consumption, with large stocks of friable and bonded asbestos cement products remaining throughout the built environment.[7] To date, information is scarce about the possible risks of disease associated with exposure to in-situ asbestos, to either tradespeople or residents. The findings of an excess risk of mesothelioma in Korda and colleagues' study might provide some insight for the disease risks associated with exposure to low levels of asbestos in the built environment, arising from the remaining asbestos stock. Other countries—eg, Italy and the UK—are similarly affected.

The historical summary for the background to Korda and colleagues' study[8] set in the ACT should be compulsory reading for those interested in public-health translation. The first warnings of the dangerous practice behind the insulation installation were made in 1968, by Gersh Major, the man who also obtained the only fibre (as distinct from dust) measurements at the Wittenoom blue asbestos mine in Western Australia in 1966.[9] Wittenoom was the location of a blue asbestos mining and milling operation in Western Australia that is infamous for high rates of asbestos-related diseases in the 7000 asbestos company workers as well as the 5000 residents who lived in the township of Wittenoom but did not work for the asbestos company. Specific (and unsuccessful) attempts at remediation of affected houses in the ACT was undertaken in the 1980s and 1990s; yet now, recommendations are for demolition of all affected houses. Similar delayed public-health messages were evident at Wittenoom. As early as 1948, warnings were made of heavy disease risks in mine workers, particularly risk for asbestosis, from asbestos exposure;[10] in 1931, the UK Code of Regulations for Asbestos banned the use of hessian bags for transporting asbestos, but this regulation was ignored, with such bags used throughout the life of the Wittenoom mine and even reused later at other mines and in other industries.[11]

More general implications from the study by Korda and colleagues, and its antecedents, are how to best undertake asbestos removal and prevent asbestos exposure for the whole population, in view of the failure of early attempts at remediation, and the ageing and more friable (and, hence, more dangerous) asbestos in place everywhere. For instance, millions of people are reported to be living under weathered friable asbestos roofs—with no ceilings—in South Africa, and no remediation plans are in place.[12] The Netherlands now has a long-term plan for staged removal that aims to ensure maximum safety for workers removing the asbestos and individuals affected by the contamination, and similar plans need to be made elsewhere. What is not needed is a rush to remove, which

would probably result in worse outcomes (albeit in the longer term) than with, for example, the hurried home insulation scheme in Australia.[13]

What the study by Korda and colleagues also shows is the value of a good, working, national record linkage facility. Vermiculite, contaminated with an amphibole asbestos (Libby amphibole), was mined and milled at Libby, MT, USA, between 1920 and 1990. The Libby area was heavily contaminated with Libby amphibole from the vermiculite mining and processing facility located within the town as well as from distribution of the contaminated vermiculite throughout the community (eg, as home insulation, aggregate on driveways and baseball fields, and soil conditioner in gardens).[14] The hazards of Libby amphibole could possibly have been delineated earlier if the USA had national record linkage, wherein Libby residents could have been linked to national deaths and cancer incidence records. Likewise, with a working record linkage system and using similar techniques to Korda and colleagues, the risks arising from the insulation contaminated with Libby amphibole used in millions of US homes[15] could also be quantified.

Future research in this area should concentrate on determining the risks associated with living around, working on, and removing asbestos from the built environment. In particular, establishing what the levels of exposure are from living in a house containing asbestos cement products or from working on or living in asbestos cement structures undergoing renovation or repair. Furthermore, the risks for removalists and bystanders during and asbestos removal procedure should also be quantified, as well as the exposure risks during and after natural disasters (eg, cyclones, fires, earthquakes).[1]

Nicholas de Klerk, Alison Reid
Telethon Kids Institute, University of Western Australia, Subiaco, WA 6008, Australia (NdK); and School of Public Health, Curtin University, Bentley, WA, Australia (AR)
nick.de.klerk@uwa.edu.au

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