COMMUNITY AWARENESS & KNOWLEDGE OF ASBESTOS THREATS & CONSEQUENCES

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Contents

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COMMUNITY AWARENESS & KNOWLEDGE OF ASBESTOS THREATS & CONSEQUENCES

Existing Research

Existing research on community awareness and knowledge of asbestos threats and consequences in Australia is scarce.

The Asbestos Safety and Eradication Agency commissioned Colmar Brunton, a market research company, to conduct quantitative research on asbestos awareness in 2014, 2016 and 2018.[1] These surveys were split into three groups, including the general public, tradespersons, and real estate personnel. The respondents in the public category numbered around 1,000 in each period and the samples were aligned with the Australian Bureau of Statistics census distributions.

The 2018 executive report from Colmar Brunton indicates that there were improvements in community attitudes towards risks and importance of asbestos from 2014 to 2018. However, our researchers interpret the summary table presented in the full report as "no real change" over the period.[2]

Most of the questions directed at the public in the Colmar Bruton surveys from 2014-2018 were subjective.[3] For example, the 2018 survey questions asked the respondents to rate their perceptions of being informed about asbestos and its dangers, the importance of being knowledgeable about asbestos and its dangers, their perceived level of knowledge associated with asbestos and its dangers, their

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[1] Available at Asbestos Safety And Eradication Agency, 'Asbestos Safety' viewed 23 May 2021 at https://www.asbestossafety.gov.au/research-publications/asbestos_safety_research. The Asbestos Safety and Eradication Agency website provides only the executive summaries. The full reports were provided upon request.

[2] Colmar Brunton, *Asbestos Awareness Research 2018* (Asbestos Safety and Eradication Agency 0005 Draft Report, June 2018) 11.

[3] See Colmar Brunton, *Asbestos Awareness Research* (Asbestos Safety and Eradication Agency 0005 Draft Report, June 2018) 31-57.

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confidence in ability to identify asbestos containing material, and their attitudes toward risks and importance of asbestos.

An understanding of the community's perceptions, attitudes, and perceived levels of knowledge about issues can be important in many contexts. However, when the gravity of a risk includes mass deaths, the most critical questions at issue are whether Australians in fact understand the nature and scope of the dangers involved and are taking appropriate action to protect themselves and others from these dangers.

For example, a Safe Work Australia study found that while construction and maintenance workers indicated they were well aware of the potential dangers of asbestos to their health, they lacked knowledge on how to recognise asbestos containing materials and they were not complying with safety procedures as well as they perceived.[4]

[4] Safe Work Australia, 'Asbestos Exposure and Compliance Study of Construction and Maintenance Workers' (February 2010).

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Our Research

To accurately assess the community levels of awareness of asbestos threats requires one to define what "awareness" means. Is it sufficient for a person to merely know that asbestos might be dangerous to their health? Would such knowledge lead most people to take appropriate action to prevent harmful exposure to asbestos for themselves and others? We think not.

Are the following beliefs or misconceptions a barrier to reducing future incidences of asbestos-related diseases?

- **Deaths from asbestos-related diseases in Australia are rare.**
- **The number of asbestos-related disease fatalities in Australia is very small.**
- **These deaths are resulting from historical settings that no longer exist today.**
- **All or most of these deaths arise from occupational exposure.**
- **Asbestos-related diseases always or usually only occur following long periods of intense exposure.**
- **Most people with asbestos-related diseases are male and old.**
- **Most people with such diseases have worked for long periods in traditional industries.**
- **Incidences of mesothelioma are only probable when minimum levels of exposure to asbestos are exceeded.**
- **Asbestos-related diseases are curable.**

We think so.

Consequently, we define proper awareness by householders of the risks of legacy asbestos in homes to include knowledge of the following facts:

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- **That asbestos is dangerous to health - (the most fundamental principle of legacy asbestos risk).[5]**
- **That there is no safe level of exposure to asbestos - (the nature of the risk).[6]**
- **That harmful exposure to asbestos commonly results in death - (the gravity of potential harm).[7]**
- **That more than 1,000 Australians die from asbestos-related diseases annually - (the magnitude of the harm).[8]**

To evaluate the public's knowledge of the dangers and impacts of asbestos based on these criteria, we designed survey research questions to test this specific knowledge on a multiple-choice basis. We then added these questions to our pre-existing omnibus household survey.

[5] International Agency for Research on Cancer, 'Asbestos' (1977) 14 Monographs on the Evaluation of Carcinogen Risks of Chemicals to Man; International Agency for Research on Cancer, 'Asbestos. An Overall Evaluation of Carcinogenicity' (1987); IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, suppl 7. Lyon, France: 106-116. See also World Health Organization, 'Elimination of Asbestos-Related Disease' (2006, Geneva) viewed 23 May 2021 at https://apps.who.int/iris/bitstream/handle/10665/69479/WHO_SDE_OEH_06.03_eng.pdf;sequence=1.

[6] See Werfel Case [119]. Their Honours note that the warnings they reviewed failed to bring attention to the seriousness of the injury that might result and did not indicate that there was no known threshold dose below which no risk of mesothelioma exists. See also NSW Ombudsman, 'Responding to the Asbestos Problem: The Need for Significant Reform in NSW' (November 2010) 4.

[7] Proper risk assessment requires an understanding of the potential gravity and magnitude of harm.

[8] Asbestos Safety and Eradication Agency, 'Asbestos Health Risks' viewed 16 May 2021 at https://www.asbestossafety.gov.au/asbestos-health-risks-and-exposure/asbestos-health-risks.

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Research Methodology

The Digital Finance Analytics survey seeks information from 52,000 Australian households each year on a rolling basis and has operated since 2003. The number of participants in the survey during the period the questions on asbestos were included (April 2020 to May 2021) totalled 43,000. The full datasets generated from the survey are extensive and include 150 factors.

Digital Finance Analytics facilitates and manages the survey processes. To ensure a consistent approach and collection of independent data, telephone communication with Australian households is carried out weekly by a leading market research company that uses well established professional survey and statistical methodologies and practices. The response rate of the survey is typically around 30 percent but rose to nearly 60 percent during some of the COVID 19 period.

The households contacted were selected using stratified random samples. The market research company has the latest Australian Bureau of Statistics census data uploaded onto its computer and uses proprietary algorithms to align the distributions of this data to randomised household contact numbers in the relevant states, areas, and postcodes.[9] This research approach and the large numbers of survey participants enables credible extrapolation of the results across the full population.

The accuracy of the combined data generated every two weeks is crosschecked by Digital Finance Analytics. For example, the responses from individual households on the levels of their mortgage debt are checked against published national residential property mortgage datasets.

The questions added to the survey asked households four factual questions on asbestos on a multiple-choice basis. These questions were tested in the market for a

[9] See Australian Bureau of Statistics, 'Postcodes & Postal Areas' viewed 13 May 2021 at https://www.abs.gov.au/websitedbs/censushome.nsf/home/factsheetspoa?opendocument&navpos=450.

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month, and then adjusted slightly, with the inclusion of the "I do not know what asbestos is" option to question one.

The household responses were not prompted or led in any way. The questions on asbestos were asked on a random basis among other topics, such as financial matters. Further, the options for each multiple-choice question were presented to households randomly (in varying orders) to mitigate any order bias.

The main purpose of the asbestos questions was to check whether Australians understand the basic facts about asbestos risks and impacts, as outlined in questions one to four. The data analysis is bonus information generated by the survey process and is not tested for statistical significance.[10]

Sound scientific research should be verifiable. We are highly confident that the same or similar questions presented to a credible sample of the Australian population would produce equivalent outcomes. The results from the first 4,000 household respondents and the final 43,000 varied only marginally, confirming the statistical validity of the initial and overall samples and results.

[10] Regression analysis would arguably add little to the overall findings or granularity of the results. It is likely that there are positive statistically significant socioeconomic factors at play in question one, with the lowest income households most poorly informed and those on the highest income tiers most commonly answering this question correctly. However, merely knowing that asbestos is dangerous to health (without more) is unlikely to prompt safe conduct when dealing with legacy asbestos in homes. It is also likely that working in the construction, trade and maintenance sector is positively and significantly aligned to the correct answers in questions 2 to 4. Yet, the overall results from construction, trade, and maintenance respondents in the survey were mediocre at best.

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Research Results

In the tables below, the n values represent the number of households who were contacted by the research company and voluntarily participated in the survey on an unpaid basis.

The correct answer to each multiple-choice question is followed by an asterisk and the answers in the presented tables are indicated as percentages of the respondent households. The figures presented in the data analyses are the percentages of the household respondents within the relevant demographic sets (for example, participating households who live in South Australia).

The survey responses were later segmented and examined by the state or territory, age, gender, socioeconomic status, and occupation of the respondent household.

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Table 1: Q1 - Is asbestos dangerous to health? (%)

	Yes*	No	Unsure	Unrecognised
Total number of Q1 respondents (n) = 43,000				
Australia wide	28	21	42	9

Data Analysis

State & Territory				
NSW	30	20	41	9
Victoria	26	22	42	10
Queensland	28	21	42	9
South Australia	23	23	43	11
Western Australia	30	20	42	8
Tasmania	26	23	41	10
Northern Territory	28	19	44	9
ACT	37	15	41	7
Age				
20s	27	21	42	10
30s	29	20	42	9
40s	43	14	38	5
50s	40	15	39	6
60s	15	26	48	11
Gender				
Male	32	18	44	6
Female	24	24	39	13

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When households answered "no" or "unrecognised" to question one (30% of total respondents), they were asked no further questions because if they do not know what asbestos is, or think it is not dangerous to health, their answers to the subsequent questions would have been guesses. The respondents who answered "yes" or "unsure" were asked questions two, three and four ("the remaining households").

Table 2: Q2 - What level of exposure to asbestos is dangerous? (%)

	There is no safe level of exposure*	Brief exposure is dangerous	Some exposure over time is dangerous	Intense exposure over time is dangerous
n = 30,100				
Australia wide	2	10	9	79

Data Analysis

State & territory				
NSW	3	11	9	77
Victoria	2	9	8	81
Queensland	2	9	9	80
South Australia	2	7	8	83
Western Australia	2	11	9	78
Tasmania	2	10	7	81
Northern Territory	3	9	9	79
ACT	3	15	12	70
Age				
20s	2	9	7	82
30s	3	12	8	77
40s	3	14	14	69
50s	3	13	13	71
60s	0	2	4	94
Gender				
Male	2	10	8	80
Female	3	10	9	78

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Table 3: Q3 - What is the most harmful effect of asbestos exposure? (%)

	Lung disease	Cancer	Death*	Influenza
n = 30,100				
Australia wide	88	7	5	0

Data Analysis

State & territory				
NSW	86	8	6	0
Victoria	89	6	5	0
Queensland	89	7	4	0
South Australia	91	6	3	0
Western Australia	87	7	6	0
Tasmania	89	7	4	0
Northern Territory	88	8	4	0
ACT	82	11	7	0
Age				
20s	89	7	4	0
30s	85	9	6	0
40s	83	10	7	0
50s	84	9	7	0
60s	97	2	1	0
Gender				
Male	88	7	5	0
Female	88	7	5	0

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Table 4: Q4 - How many Australians die each year from asbestos-related diseases? (%)

	Less than 50	50 to 100	100 to 1,000	1,000 to 4,000*	More than 4,000*[11]
n = 30,100					
Australia wide	93	1	1	5	0

Data Analysis

State & territory					
NSW	92	1	1	6	0
Victoria	94	1	1	4	0
Queensland	94	1	1	4	0
South Australia	95	1	1	3	0
Western Australia	92	1	1	6	0
Tasmania	93	2	1	4	0
Northern Territory	95	0	1	4	0
ACT	89	3	1	7	0
Age					
20s	94	1	1	4	0
30s	91	2	1	6	0
40s	90	2	1	7	0
50s	91	2	1	6	0
60s	98	0	0	2	0
Age					
Male	93	1	1	5	0
Female	94	1	1	4	0

[11] In the early stage of our research, the website of the Australian Asbestos and Eradication Agency indicated that the estimated number of deaths annually from asbestos-related diseases was more than 4,000.

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Result Analysis

Question one

Asbestos is carcinogenic and exposure to its fibres causes and contributes to mass loss of life in Australia and elsewhere.[12] Diseases caused by exposure to asbestos include asbestosis,[13] asbestos-related lung cancer,[14] mesothelioma,[15] ovarian cancer and larynx cancer.

From the initial sample of 43,000 households, 28 percent of respondents knew that asbestos is dangerous to health ("positive households"). Another 42 percent were unsure whether asbestos is dangerous to health ("unsure households"), 21 percent indicated that asbestos is not dangerous to health ("negative households"), and 9 percent did not know what asbestos is ("unknown households").

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[12] See 'Global and Regional Burden of Cancer in 2016 Arising from Occupational Exposure to Selected Carcinogens: A Systematic Analysis for the Global Burden of Disease Study 2016' (2020) 77 *Occupational and Environmental Medicine* 151, 152. The Global Burden of Disease study estimated total deaths worldwide in 2016 from occupational asbestos exposure at 218,827 (including 181,450 deaths from lung cancer, 27,612 deaths from mesothelioma, 6022 deaths from ovarian cancer, and 3743 deaths from larynx cancer). Notably, this study estimate excludes deaths from non-occupational exposures.

[13] While asbestosis is not fatal, it can trigger respiratory or cardiac failure and or can lead to subsequent diagnoses of mesothelioma or asbestos-related lung cancer. Asbestosis is a chronic lung disease caused exclusively by inhalation of asbestos fibres and results in the formation of scar tissue in the lungs around inflation caused by asbestos fibres. Asbestosis is not a notifiable disease in Australia, so the levels of historical and continuing deaths from asbestosis are unknown.

[14] At present, lung cancer is the form of cancer linked to the highest number of fatalities a year in Australia, with close to 9,000 deaths during 2019. See Australian Government, Cancer Australia, 'Lung Cancer Statistics' at https://lung-cancer.canceraustralia.gov.au/statistics. See also Australian Government, Australian Institute of Health and Welfare, 'Cancer in Australia 2019' (Cancer 18 Series no 119. Cat no CAN 123, Canberra: AIHW) 96. While smoking is the largest risk factor for lung cancer, exposure to asbestos is an interacting risk factor that increases the risk of lung cancer exponentially. For a medical outline on the interactions between smoking and asbestos exposure as contributors to lung cancer, see Sonya Klebe, James Leigh, Douglas Henderson and Markku Nurminen, 'Asbestos, Smoking and Lung Cancer: An Update' (2020) 17 *International Journal of Environmental Research and Public Heath* 258.

[15] Mesothelioma (also called malignant mesothelioma) occurs when abnormal cells in the tissue that surrounds the lungs grow in an uncontrolled way. This is not the same as lung cancer, which starts inside the lungs: Australian Government Cancer Australia, 'What is Mesothelioma?' at https://www.cancer.org.au/cancer-information/types-of-cancer/mesothelioma. Mesothelioma is a notifiable disease. See Australian Government, Australian Institute of Health and Welfare, 'Mesothelioma in Australia 2019' (published August 2020).

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Hence, more than two thirds of the respondent households did not positively understand that asbestos is dangerous to health, suggesting this most basic tenet of asbestos knowledge is poorly understood across the population. The unrecognised and negative households (totalling 30 percent of the initial respondents) were asked no further questions because their answers would have been guesses only.

People aged in their 40s and 50s were relatively more aware of the dangers of asbestos to health than older and younger respondents. The high levels of incorrect answers from those in their 20s and 30s are concerning.

The variations across the states and territories were marginal. The relatively higher percentages of correct answers from those residing in the ACT may stem from continuing publicity on the deaths from exposure to insulation containing asbestos.[16]

Males were more informed than females, although these differences were largely confined to question one. These findings suggest there is a larger pool of females than males who are unaware of the dangers of asbestos to health, while among those who are aware, their knowledge is similar to their male counterparts.

As might be expected, respondents employed in the construction, trade, and maintenance sector were the most knowledgeable about the dangers of asbestos to health (85 percent), with around half of those working in the legal sector and management also aware of this fact. Among the occupational groups least aware of the dangers of asbestos were respondents working in healthcare support.

There may be a strong correlation in question one between the gross income levels of a household and awareness that asbestos is dangerous to health, with the percentages of yes responses rising rapidly as the income increased.[17]

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[16] See, eg, Kate Midena, 'Federal Government Announced $8m Assistance Scheme for My Fluffy Asbestos Victims, ACT Government Set to Match It', *ABCnews* 6 May 2021.
[17] This data was not tested for statistical significance.

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Question two

The World Health Organization confirmed in 1976 that there is no safe level of exposure to asbestos.[18] Only 2 percent of the remaining households knew this critical fact. A large majority of these respondents (79 percent of 30,100 respondents) thought that asbestos is only dangerous when there is intense exposure over time.

Among those who answered question two correctly, the occupation group with the highest percentage answering no safe level of exposure was construction, trade, and maintenance (13 percent). However, this result is far from optimal and likely reflects the fact that training on the handling and control of legacy asbestos[19] is not compulsory for construction, trade and maintenance workers in all states and territories of Australia. In a 2018 survey of tradespersons involved with home renovations, the proportion who had undertaken formal training on the management, handling and removal of asbestos was 37 percent.[20]

To save lives, the longstanding myth that asbestos-related diseases are confined to people with intense exposure over long periods must be debunked.

Question three

The full gravity of potential harm from exposure to asbestos is poorly comprehended by Australians. Of the remaining households, 88 percent thought the most harmful effect of asbestos exposure is lung cancer. Only 5 percent were aware that once

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[18] International Agency for Research on Cancer, 'Asbestos' (1977) 14 Monographs on the Evaluation of Carcinogen Risks of Chemicals to Man; International Agency for Research on Cancer, 'Asbestos. An Overall Evaluation of Carcinogenicity' (1987); IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, suppl 7. Lyon, France: 106-116.
See also AW Musk, 'Milestones in the Knowledge and Treatment of Asbestos Related Diseases' in Lenore Layman and Gail Phillips (eds), *Asbestos in Australia: From Boom to Bust* (Monash University Publishing, 2019) 137. Musk indicates that medical science confirmed in the 1960s that mesothelioma is a fatal cancer resulting exclusively from asbestos exposure and can arise from small doses.
[19] Legacy asbestos is asbestos already inbuilt within properties across Australia and is analogous to the phrase "in situ asbestos".
[20] Colmar Brunton, *Asbestos Awareness Research* (ASEA0005 Draft Report, June 2018) 60.

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diagnosed, most cases of asbestos-related disease are fatal within relatively short timeframes.

The households who were most aware of the lethal nature of asbestos exposure worked in construction, trade, and maintenance. Nonetheless, only 31 percent of these respondents selected the death option.

The answers to question three are consistent with the present online public guidance to householders that fails to discuss the nature of the dangers to health from asbestos exposure entirely or that emphasises the possibility of "lung disease" or "cancer".[21] The public health guidance and risk warnings on asbestos dangers in Australia should be required to explicitly use the word "death".

The average 5-year survival rate for all cancers in Australia is now close to 70 percent and is above 90 percent for some forms of cancer.[22] So while a diagnosis of cancer remains a serious medical outcome that should be feared, many of these sufferers can be treated and cured of their cancer or can live for long periods following their diagnosis. This is not the case for mesothelioma which is incurable and invariably fatal.

Any person who has been given a cancer diagnosis well understand the trauma of the average survival statistics that are commonly presented upon diagnosis. For mesothelioma victims, this trauma is the most extreme because effective treatment options are limited to non-existent,[23] and the survival statistics are the worst on the cancer continuum.

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[21] See Environment Health Standing Committee, enHealth, *Asbestos: A Guide for Householders and the General Public* (February 2013); NSW Government, *Asbestos Fact Sheet for Home Owners and Tenants* (March 2019).

[22] Australian Institute of Health and Welfare, 'Cancer in Australia: In brief 2019' (Cancer Series no. 122. Cat no. CAN 126. Canberra). These statistics are averages for each cancer type.

[23] See, eg, Greg Callaghan, 'Doctors and Lawyers are Calling it the Third Wave: The Spate of Asbestos-related Diseases Contracted Through Home Renovations and Indirect Exposure' *smh.com.au* (24 November 2017). Professor Ken Takahashi, director of the Asbestos-related diseases and Research Institute confirms that, '[w]e don't even have a drug to treat … [mesothelioma] once a diagnosis is confirmed, much less one that will prevent its development once someone has been exposed to asbestos dust.'

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The five-year survival rate of mesothelioma is 5-6 percent,[24] the lowest such rate among the cancer types recorded by the Australian Institute of Health and Welfare, and this level has barely moved over the last 30 years.[25] The average five-year survival rate of lung cancer is also relatively low at 19 percent, although new treatments have improved this statistic since 1990.[26]

These medical facts ought to be conveyed to the public so people can make proper risk-based decisions regarding legacy asbestos in their homes.

Question four

Few Australians know about the level of ongoing fatalities from asbestos-related diseases. Most of the remaining households (93 percent) believed that less than 50 people die each year from asbestos-related diseases. Only 6 percent of respondents chose the above 1,000 deaths options. These responses to question 4 reflect an enormous gap between public knowledge and the harsh realities.

Continuing deaths each year in Australia from asbestos-related diseases remain stubbornly high at an estimated 4,000,[27] equating to 77 fatalities per week. Mesothelioma alone accounts for around 700-800 deaths annually.[28] To reflect these statistics in context, the number of accidental workplace fatalities in any given year in Australia averages around 250,[29] there were 1,161 road related deaths in Australia

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[24] Australian Government, Australian Institute of Health and Welfare, *Mesothelioma in Australia 2018* 1. See also Australian Government, Australian Institute of Health and Welfare, 'Cancer in Australia 2019' (Cancer 18 Series no 119. Cat no CAN 123, Canberra: AIHW) 78.
[25] Australian Government, Australian Institute of Health and Welfare, 'Cancer in Australia 2019' (Cancer 18 Series no 119. Cat no CAN 123, Canberra: AIHW).
[26] Australian Government, Cancer Australia, 'Lung Cancer in Australia Statistics' viewed on 22 September 2020 at https://www.canceraustralia.gov.au/affected-cancer/cancer-types/lung-cancer/statistics.
[27] Asbestos Safety and Eradication Agency, 'Asbestos Health Risks' viewed 16 May 2021 at https://www.asbestossafety.gov.au/asbestos-health-risks-and-exposure/asbestos-health-risks.
[28] See Australian Government, Australian Institute of Health and Welfare, *Mesothelioma in Australia 2019* (published August 2020).
[29] The fatalities webpage of Safe Work Australia indicates that 3,571 workers died from work related injuries from 2003 to 2018 (equating to an average 250 deaths a year). Deaths from diseases, such as cancer, are excluded from this statistic, without differentiation between cancers caused by occupational exposure and

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during the 12 months ended January 2020,[30] and at the time of this release, the number of deaths in Australia from COVID 19 was 910.[31]

No occupational group was well informed about the annual number of deaths from asbestos diseases. While 31 percent of respondents working in the construction and maintenance sector chose the above 1,000 death options, another 59 percent of these employers or workers answered less than 50. The responses to question 4 are consistent with existing online public health guidance which omits the death counts from asbestos-related diseases.[32]

The 2016 Global Burden of Disease study estimated close to a quarter of a million fatalities annually from occupational exposure to asbestos, so worldwide deaths from asbestos-related diseases are already in the millions.[33]

In Australia, applying the ratios accepted or suggested in the medical literature and by public health scholars, the estimated combined death count in Australia from mesothelioma and asbestos-related lung cancer[34] during the period 1945 to 2019 is

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otherwise: see Safe Work Australia, 'Fatality Statistics' viewed 23 May 2021 at https://www.safeworkaustralia.gov.au/statistics-and-research/statistics/fatalities/fatality-statistics.

[30] Australian Government, Department of Infrastructure, Transport, Regional Development, and Communications, 'Road Safety Statistics' viewed 23 May 2021 at https://www.bitre.gov.au/statistics/safety.

[31] Australian Government Department of Health, 'Corona Virus (COVID 19) Current Situation and Case Numbers' viewed 14 May 2021 at https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-current-situation-and-case-numbers#covid19-summary-statistics.

[32] See Environment Health Standing Committee, enHealth, *Asbestos: A Guide for Householders and the General Public* (February 2013); NSW Government, *Asbestos Fact Sheet for Home Owners and Tenants* (March 2019).

[33] 'Global and Regional Burden of Cancer in 2016 Arising from Occupational Exposure to Selected Carcinogens: A Systematic Analysis for the Global Burden of Disease Study 2016' (2020) 77 *Occupational and Environmental Medicine* 151. Assuming the estimated deaths in 2016 also occurred in prior years, a million deaths would have been surpassed in less than five years. Furthermore, this study excludes deaths arising from non-occupational exposures to asbestos. The global fatalities will likely continue (or even rise), given the large stocks of *in situ* asbestos in most developed nations and the continuing use of asbestos in other countries.

[34] The causes of lung cancer deaths are not generally investigated or included on death certificates. Nonetheless, epidemiologists commonly accept a minimum ratio of two asbestos related lung cancer deaths for each mesothelioma fatality: see, eg, AD LaMontagne, CE Hunter, D Vallance and AJ Holloway, 'Asbestos Disease in Australia: Looking Forward and Looking Back' (2008) 18 *New Solutions* 361, 368; V McCormack, J Peto, G Byrnes, K Straif and P Boffetta, 'Estimating the Asbestos Related Lung Cancer Burden from Mesothelioma Mortality' (2012) 106 *British Journal of Cancer* 575; Asbestos Diseases Research Institute, 2019 *Annual Report* 6. There are published sources suggesting a ratio of 4-1 should be used to estimate the number of lung cancer deaths in a given population that are likely to have been caused by asbestos exposure. When applied, this ratio results in estimated deaths from asbestos-related diseases in Australia exceeding 100,000

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in the range of 60,000-152,000. This estimate excludes deaths from asbestosis and asbestos-related ovarian and larynx cancer because data on these fatalities is lacking. These death counts continue to mount.

Summary

If one accepts our definition of household awareness, the survey results suggest the levels of community awareness and knowledge in Australia on the dangers and deadly impacts of asbestos are low.

More than two thirds of the households surveyed did not know what asbestos is or did not know that it is positively dangerous to health. Even among the better-informed households, most thought that asbestos is only dangerous to health following intense exposure, most believe that the most harmful consequence of asbestos exposure is lung diseases, and most indicate that the number of Australians dying from asbestos-related diseases each year is less than 50. These findings suggest the Australian public barely knows about the asbestos crisis, the associated death counts, and the large number of lives potentially still at risk.

Even among those surveyed who knew that asbestos is dangerous to health, most still connect asbestos-related disease to old men who work in mines or factories with intense exposure to asbestos for long periods, as epitomised by Bernie Banton. That is, most believe the dangers of asbestos are limited to a very small group of people and view the risks of asbestos exposure for themselves and others as minimal to non-existent. Many Australians diagnosed with mesothelioma linked to possible or probable exposure to asbestos in their homes or other non-occupational settings held the same beliefs as those expressed by the majority of survey respondents and were not appropriately warned.

(i.e., 20,000 deaths from mesothelioma, 80,000 from lung cancer and additional estimated deaths from larynx and ovarian cancer). The reasons why medical researchers readily apply ratios between mesothelioma and asbestos-related lung cancer cases to estimate the current burdens of asbestos-related disease, but are more reluctant to do this to estimate the historical fatalities, are unclear. The survival rate of lung cancer has improved over the last 30 years, so deaths from this disease were more probable in the past than the in present.

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Such views are catastrophic, as indicated in a recent court case. In *Amaca Pty Ltd v Werfel*,[35] Werfel was diagnosed with mesothelioma following brief periods as a fencing contractor in the late 1990s and do-it-yourself home renovator in 2000-2001.

In his evidence, Mr Werfel said that he recalled seeing Bernie Banton on television and the campaigns to secure compensation from James Hardie Industries Ltd in the period 2004 to 2006. From these developments, he became aware that people who had worked in asbestos mines or in factories producing asbestos products had died from exposure to asbestos. Despite having had roles as a health and safety representative at work, Werfel submitted that he did not know about the risks of dying from doing occasional projects on his home containing asbestos cement sheeting or from short periods of employment working on asbestos cement fencing. Werfel stated that had he known about these risks, he would not have engaged in that work or would have taken precautions if they were safe.[36]

The Supreme Court of South Australia found that Werfel would have become aware of the risks of dying from exposure to asbestos cement products if James Hardie 'had more actively and strongly warned of the danger of working on asbestos-cement products from 1990.'[37]

The Court ultimately held that James Hardie owes a duty of care to avoid injury to persons who might occasionally remodel, repair or remove its asbestos-cement products, and that this duty had been breached with respect to Werfel.[38]

More broadly, the Court found that James Hardie has a duty to warn homeowners, occupants and tradespersons who might occasionally remodel, repair or remove its asbestos-cement products.[39] Their Honours suggest this duty might be satisfied by public campaigns.[40]

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[35] *Amaca Pty Ltd v Werfel* [2020] SASCFC 125 "Werfel Case".
[36] Werfel Case [366-370].
[37] Werfel Case [372].
[38] James Hardie has sought leave to appeal the decision to the High Court.
[39] Werfel Case [205].
[40] Werfel Case [205].

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This legal outcome is seminal. Asbestos-cement is the dominant asbestos product within Australian homes, fatalities linked to home renovations comprise a majority of the mesothelioma claims made to the Asbestos Injuries Compensation Fund,[41] and warnings about the risks of exposure during home maintenance and renovations have increased markedly over the last decade.[42] Yet, there have been no national mass media public health campaigns or risk warnings on asbestos in Australia.

Overall, the household survey findings are consistent with inadequate public information, education, and warnings in Australia on asbestos threats and consequences.

[41] KPMG audits and reports annually on this fund set up by James Hardie Industries Ltd in 2006. See, eg, KPMG, *Valuation of Asbestos Related Disease Liabilities of Former James Hardie Industries Ltd Entities to be Met by the Asbestos Injuries Compensation Fund* (19 May 2020) 24-25.

[42] See, eg, Corie Gray, Renee Carey and Alison Reid, 'Current and Future Risks of Asbestos Exposure in the Australian Community' (2016) 22 *International Journal of Occupational and Environmental Health* 292, 295.

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