

Science for Environment Policy

Asbestos exposure increases risk of cancer in ship recycling workers

Recycling ships for scrap is a known asbestos exposure hazard, yet this study is one of few to trace asbestos-related cancer rates in shipbreaking workers. The results, obtained from former shipbreakers in Taiwan, show higher rates of cancer overall, especially oesophageal and lung cancers.

Although awareness of the health risks of asbestos can be traced back to the early 1900s, the minerals continued to be used for decades afterwards. Asbestos use began to be restricted in the 1980s and it is now banned in 52 countries, yet approximately 125 million people worldwide are still exposed to it through their work environments. This includes those who work on ship recycling yards, as asbestos was used to provide thermal insulation in ships built in the 1960s and '70s.

There is now indisputable scientific evidence that inhalation of asbestos causes cancer, including lung cancer¹ and mesothelioma, a rare form of cancer which develops in the linings of the lungs or stomach. A number of studies of shipyard workers have clearly shown increased mortality due to cancer.

The ship recycling market hit a peak in the years following the financial downturn, bringing the issue of asbestos exposure to international attention. Although it is a recognised hazard, knowledge of the rates of asbestos-related disease among shipbreakers is lacking. Most studies have only assessed mortality which, while an important measure, does not record the many people with cancer who do not die from the disease (up to a third of sufferers).

Therefore, this study looked at the link between cancer *incidence* and asbestos exposure. The study focused on former workers of shipbreaking yards in Taiwan, a centre for shipbreaking between the 1980s and the end of the 1990s. The researchers used a matched-cohort study, which means many workers were followed over time and 'matched' to similar individuals from the general population as a comparison.

Subjects were selected from a shipbreaking workers' union, whose membership includes 70% of people employed in the industry in Taiwan, and of which they must have been a member since 1985. Workers were assigned to matched controls from the general population based on age, gender and living area. In total, 4 427 shipbreaking workers and 22 135 controls were followed.

The researchers used the same dataset to obtain cancer incidence for workers and the reference population: the Taiwan Cancer Registry, a record for new cancer cases, which was set up in 1979. The researchers assessed likely exposure to asbestos, differentiated by eight job titles: flame cutters, odd-jobbers, lifters, supervisors, knockers, sorters, drivers and administrators. The highest exposure job was flame cutter, and administrator the lowest.

Continued on next page.

June 2016
Thematic Issue 55

**Ship Recycling:
Reducing Human
and Environmental
Impacts**

**Subscribe to free
weekly News Alert**

Source: Wu, W., Lin, Y., Li, C., Tsai, P., Yang, C., Liou, S. & Wu, T. (2015). Cancer Attributable to Asbestos Exposure in Shipbreaking Workers: A Matched-Cohort Study. *PLoS ONE*. 10(7): e0133128. DOI: 10.1371/journal.pone.0133128. This study is free to view at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0133128>

Contact: tnwu@hk.edu.tw; ader.una@gmail.com

**Read more about:
[Environment and
health, Waste](#)**

The contents and views included in *Science for Environment Policy* are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

1. One study reported that shipyard workers were at a higher risk of mortality from lung cancer by a magnitude of 26%.

Science for Environment Policy

Asbestos exposure increases risk of cancer in ship recycling workers (continued)

June 2016
Thematic Issue 55

Ship Recycling: Reducing Human and Environmental Impacts

[Subscribe](#) to free
weekly News Alert

Source: Wu, W., Lin, Y., Li, C., Tsai, P., Yang, C., Liou, S. & Wu, T. (2015). Cancer Attributable to Asbestos Exposure in Shipbreaking Workers: A Matched-Cohort Study. *PLoS ONE*. 10(7): e0133128. DOI: 10.1371/journal.pone.0133128. This study is free to view at:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0133128>

Contact: tnwu@hk.edu.tw
ader.una@gmail.com

Read more about:
[Environment and health](#), [Waste](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

The researchers calculated Total Exposure Potential scores for the workers based on their job title and years of employment. They were grouped into three categories of high, medium or low exposure. Finally, the researchers calculated hazard ratios (the risk of getting cancer over the study time period, compared to the likelihood in the control population) for various types of cancer, by job category and exposure.

By the end of the 24-year follow up (2008), the researchers had collated data on 436 cancer cases and 940 deaths. Analysis showed that shipbreaking workers had a significantly higher risk of developing cancer compared to the general population. There was a significant increase in hazard ratio for overall cancer, oral cancer and lung cancer in all three asbestos exposure groups. Not only did the shipbreaking workers get cancer more often, they also got cancer *younger*. Furthermore, the relationship between cancer and asbestos exposure was dose-dependent – i.e. the more asbestos the shipbreaking workers were exposed to, the more likely they were to develop cancer.

Overall, the study confirms a positive link between cancer incidence and asbestos exposure among shipbreaking workers. As a result, the researchers recommend that any shipbreaking workers whom may have been exposed to asbestos in the past have regular health checks in order to detect disease early. They also recommend legislation to ban all asbestos-containing products (which is still lacking in many parts of the world), both in the workplace and in general environmental settings.

