

The environment we live in

The air we breathe. The water we drink. The house we live in. The environment we live in is a crucial determinant of population health. For too long neglected, dismissed, or disregarded, the importance of the environment we live in can no longer be ignored. Evidence of the impact on health of the quality of our environment is mounting. According to WHO's latest environmental burden of disease assessment, 12.6 million individuals die worldwide every year because of unhealthy environment. The Global Burden of Disease Study estimates that disease caused by all forms of pollution was responsible for 268 million disability-adjusted life years in 2015. By far, air pollution is the largest contributor to pollution-related diseases and deaths, but water pollution and toxic occupational exposure pose the next largest risks. Despite the magnitude of the problem and current gaps in knowledge, pollution can be controlled and prevention is possible. As *The Lancet* Commission on Pollution and Health, published on October 19, amply shows "it is a winnable battle". Many countries have enacted environmental laws and regulations on pollutants to protect people. Evaluating such regulations is of paramount importance if we are to implement them widely. Two studies published in this issue of *The Lancet Public Health* extend our evidence base on the health risks associated with asbestos exposure and the impact of regulation on arsenic levels.

Asbestos exposure is associated with mesothelioma and elevated cancer risks. Thus far, data are largely based on high-level exposure in occupational settings. But what about the health risks associated with asbestos insulation in houses? In a cohort of more than 1 million residents in Australia, Rosemary Korda and colleagues identified 17 000 individuals who lived in houses insulated with asbestos, and reported increased incidence of several cancers. Strikingly, the incidence of mesothelioma in men who had lived in a house insulated with loose-fill asbestos was two and a half times that of men who did not live in such houses. As an association study, still prone to confounders, causality can't be inferred, and further research and longer follow-up are now needed. Korda and colleagues' findings open new avenues for public health research in residential exposure to asbestos insulation, and potential mitigation interventions in

the many countries in which asbestos has been used to insulate houses.

Mitigation to exposure to toxic chemicals is crucial. The good news is that it is possible—as shown in the study by Anne Nigra and colleagues also in this issue of *The Lancet Public Health*. In their study, the researchers assess the effect of the regulation on maximum levels of arsenic, an established carcinogen, in drinking water in the USA. In 2006, the Environmental Protection Agency (EPA) reduced the legally permitted maximum contaminant level for arsenic from 50 µg/L to 10 µg/L in the public water systems. Using data for urinary arsenic concentrations from a national population survey (NHANES) of about 15 000 individuals, Nigra and colleagues show that exposure to arsenic in drinking water was reduced in individuals using public water system; compliance with the EPA regulation led to a decline of 17% in levels of urinary arsenic. By contrast, levels of arsenic in private well users (not regulated) did not change. The authors estimate that the regulation likely prevented more than 200 cancer cases each year in the USA. Importantly, the study illustrates the health benefits of environmental protection—health benefits that are too often disregarded at the benefits of other vested interests.

For Philip Landrigan, writing in the accompanying Comment, "Government leaders who might be tempted by the siren call of deregulation, blinded by its promised short-term economic benefits, and pressured by powerful vested interests opposed to any form of environmental control, need to pay attention to these findings". For too long, environmental protections have been considered burdensome and antinomic with economic growth. *The Lancet* Commission on Pollution and Health, co-led by Landrigan, dispels this myth, estimates the global costs of premature deaths due to environmental pollution to be more than US\$4.6 trillion per year—6.2% of global economic output, and offers actionable and cost-effective solutions to tackle these substantial health and economic losses.

Exposure to toxic chemicals and contaminated water or air at work or at home disproportionately affects poor and marginalised populations. In any country, investing in safe environments provides an extraordinary opportunity to improve public health and social justice. *The Lancet Public Health*



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