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Eur J **Cancer**. 2018 Nov;103:317-326. doi: 10.1016/j.ejca.2018.04.018. Epub 2018 Jun 11.

Environment, cancer and inequalities-The urgent need for prevention.

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Abstract

The proportion of total deaths attributable to environmental factors is estimated to be 23% of global deaths and 22% of global disability-adjusted life years (DALYs) according to one **review**. These estimates encompass all environmental agents including infectious agents but excluding behavioural factors. The authors of the **review** also estimated that 16% (95% CI: 7-41%) of **cancer** deaths are attributable to environmental risk factors (and 36% [95% CI: 17-52%] for lung **cancer**). In this article, we focus on the reasons why epidemiology is often unable to account for the whole burden of environmental carcinogens. The experience of air **pollution** is particularly instructive. While in the 1970s and early 1980s, air **pollution** was considered as a relatively marginal exposure in terms of attributable risks, the most recent estimate is that it accounts for 7.6% of global deaths and 4.2% of global DALYs world-wide (with East and South Asia accounting for 59% of the total). According to a **review**, ambient fine particulate matter air **pollution** contributed to 17.1% of ischaemic heart disease, 14.2% of cerebrovascular disease, 16.5% of lung **cancer**, 24.7% of low respiratory infections, and 27.1% of COPD mortality in 2015. Estimates for **cancer** as a whole are not available. The change in appreciation of the role of air **pollution** has been mainly due to the refinement of exposure assessment methods and the new generations of longitudinal studies. Mechanistic evidence via omic technologies is now rapidly increasing, thus lending credibility to previous epidemiological ('black box') associations. Much less is known about other environmental contaminants, some of which are widespread and pervasive, thus suggesting the need for the same rigourous methods as those applied to air **pollution**. Finally, a crucial issue remains inequality across different population groups, with uneven exposure to hazards and acquired susceptibilities due to multiple concomitant exposures and poorer health status.

KEYWORDS: Cancer; Environment; Exposome; Exposures; Inequalities; Multicausality; Omics

PMID: 29903684 DOI: 10.1016/j.ejca.2018.04.018

Publication type

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