

Outdoor air pollution – a leading environmental cause of cancer deaths

IARC scientific publication no. 161: Air Pollution and Cancer

Editors: Kurt Straif, Aaron Cohen and Jonathan Samet



The specialized cancer agency of the World Health Organization, the International Agency for Research on Cancer (IARC), announced on 17 October 2013 that it has classified outdoor air pollution as carcinogenic to humans (Group 1).

After thoroughly reviewing the latest available scientific literature, the world's leading experts convened by the IARC Monographs Programme concluded that there is sufficient evidence that exposure to outdoor air pollution causes lung cancer (Group 1). They also noted a positive association with an increased risk of bladder cancer.

Particulate matter, a major component of outdoor air pollution, was evaluated separately and was also classified as carcinogenic to humans (Group 1). The IARC evaluation showed an increasing risk of lung cancer with increasing levels of exposure to particulate matter and air pollution. Although the composition of air pollution and levels of exposure can vary dramatically between locations, the conclusions of the Working Group apply to all regions of the world.

Air pollution is already known to increase risks for a wide range of diseases, such as respiratory and heart diseases. Studies indicate that in recent years exposure levels have increased significantly in some parts of the world, particularly in rapidly industrializing countries with large populations. The most recent data indicate that in 2010, 223 000 deaths from lung cancer worldwide resulted from air pollution.

The IARC Monographs Programme, dubbed the “encyclopaedia of carcinogens”, provides an authoritative source of scientific evidence on cancer-causing substances and exposures. In the past, the Programme evaluated many individual chemicals and specific mixtures that

occur in outdoor air pollution. These included diesel engine exhaust, solvents, metals, and dusts. But this is the first time that experts have classified outdoor air pollution as a cause of cancer.

“Our task was to evaluate the air everyone breathes rather than focus on specific air pollutants,” explains Dr Dana Loomis, Deputy Head of the Monographs Section. “The results from the reviewed studies point in the same direction: the risk of developing lung cancer is significantly increased in people exposed to air pollution.”

The predominant sources of outdoor air pollution are transportation, stationary power generation, industrial and agricultural emissions, and residential heating and cooking. Some air pollutants have natural sources, as well.

“Classifying outdoor air pollution as carcinogenic to humans is an important step,” stresses IARC Director Dr Christopher Wild. “There are effective ways to reduce air pollution and, given the scale of the exposure affecting people worldwide, this report should send a strong signal to the international community to take action without further delay.”

The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships.

Download the report in ePUB format from

<http://www.iarc.fr/en/publications/books/sp161/index.php>