

Can Lung Cancer Be Related to Air Pollution?

Researchers' findings prompted the World Health Organization to classify air pollution, for the first time, as a carcinogen.

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A report from the International Agency for Research on Cancer (IARC), found that in 2010, [air pollution](#) was responsible for 223,000 deaths from [lung cancer](#) worldwide. The findings were so striking that they prompted the agency, a part of the World Health Organization (WHO), to classify outdoor air pollution as a carcinogen — a cancer-causing agent — for the first time.

In parts of the world where air pollution is particularly severe, breathing outdoor air poses a similar lung cancer risk to breathing second-hand tobacco smoke, according to Kurt Straif, PhD, the head of the agency's section that ranks carcinogens.

"The air we breathe is filled with cancer-causing substances," Straif said at the time of the report's release in 2013. "Outdoor air pollution is not only a major environmental risk to health in general, it is the most important environmental cancer killer due to the large number of people exposed."

What is air pollution?

Air pollution is composed of a host of harmful or potentially harmful substances, including:

- Fine particles produced by the burning of fossil fuels
- Harmful gases such as sulfur dioxide, nitrogen oxides, carbon monoxide, and chemical vapors
- Ground-level ozone, a reactive form of oxygen that is a major element of urban smog

What are the main causes of air pollution?

Air pollution is caused by everything from mechanized transportation and power generation to industrial activity, agricultural production, residential heating, and cooking.

There is substantial evidence that air pollution is worsening in some parts of the world, particularly countries such as China and India that are undergoing rapid industrialization.

While the overall risk of lung cancer associated with air pollution is lower in the U.S. than in some

other countries, there is still reason for concern.

“Even a low risk can be important for a large population where many people are exposed,” says Elizabeth Ward, PhD, an epidemiologist with the [American Cancer Society](#).

For the United States, 10,000 lung cancer deaths could be attributed to air pollution in 2010, according to the WHO’s [Global Burden of Disease project](#). In China, the figure was 140,000, and in India it was 13,000.

The IARC report was based on a review of more than 1,000 scientific studies on five continents. The studies focused on the sources and components of outdoor air pollution; the biological mechanisms by which air pollution could cause cancer; animal studies; and epidemiological studies that connect cancer risk to the level of exposure to pollutants.

While air pollution levels vary over time and from one location to another, the report’s conclusions apply to all regions of the world, the IARC noted.

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