

# WHO agency says air pollution causes cancer (Update 2)

October 17 2013, by Maria Cheng

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This is a May 7, 2013 file photo of a foreign tourist wearing a mask walks in front of Tiananmen Gate on a polluted day in Beijing, China. What many commuters choking on smog have long suspected has finally been scientifically validated: air pollution causes lung cancer. The International Agency for Research on Cancer declared on Thursday that air pollution is a carcinogen, alongside known dangers such as asbestos, tobacco and ultraviolet radiation. (AP Photo/Alexander F. Yuan, File)

What many commuters choking on smog have long suspected has finally

been scientifically validated: air pollution causes lung cancer.

The International Agency for Research on Cancer declared on Thursday that air pollution is a carcinogen, alongside known dangers such as asbestos, tobacco and ultraviolet radiation. The decision came after a consultation by an expert panel organized by IARC, the cancer agency of the World Health Organization, which is based in Lyon, France.

"The air most people breathe has become polluted with a complicated mixture of cancer-causing substances," said Kurt Straif, head of the IARC department that evaluates carcinogens. He said the agency now considers pollution to be "the most important environmental carcinogen," ahead of second-hand cigarette and cigar smoke.

IARC had previously deemed some of the components in air pollution such as diesel fumes to be carcinogens, but this is the first time it has classified air pollution in its entirety as cancer causing.

The risk to the individual is low, but Straif said the main sources of pollution are widespread, including transportation, power plants, and industrial and agricultural emissions.

Air pollution is a complex mixture that includes gases and particulate matter, and IARC said one of its primary risks is the fine particles that can be deposited deep in the lungs of people.

"These are difficult things for the individual to avoid," he said, while observing the worrying dark clouds from nearby factories that he could see from his office window in Lyon on Wednesday. "When I walk on a street where there's heavy pollution from diesel exhaust, I try to go a bit further away," he said. "So that's something you can do."

The fact that nearly everyone on the planet is exposed to outdoor

pollution could prompt governments and other agencies to adopt stricter controls on spewing fumes. Straif noted that WHO and the European Commission are reviewing their recommended limits on air pollution.

Previously, pollution had been found to boost the chances of heart and respiratory diseases.

The expert panel's classification was made after scientists analyzed more than 1,000 studies worldwide and concluded there was enough evidence that exposure to outdoor air pollution causes lung cancer.

In 2010, IARC said there were more than 220,000 lung cancer deaths worldwide connected to air pollution. The agency also noted a link with a slightly higher risk of bladder cancer.

Straif said there were dramatic differences in air quality between cities around the world and that the most polluted metropolises were in China and India, where people frequently don masks on streets to protect themselves. China recently announced new efforts to curb pollution after experts found the country's thick smog hurts tourism. Beijing only began publicly releasing data about its air quality last year.

"I assume the masks could result in a reduction to particulate matter, so they could be helpful to reduce personal exposure," Straif said. But he said collective international action by governments was necessary to improve air quality.

"People can certainly contribute by doing things like not driving a big diesel car, but this needs much wider policies by national and international authorities," he said.

Other experts emphasized the cancer risk from pollution for the average person was very low—but virtually unavoidable.

"You can choose not to drink or not to smoke, but you can't control whether or not you're exposed to air pollution," said Francesca Dominici, a professor of biostatistics at Harvard University's School of Public Health. "You can't just decide not to breathe," she said. Dominici was not connected to the IARC expert panel.

A person's risk for cancer depends on numerous variables, including genetics, exposure to dangerous substances and lifestyle choices regarding issues such as drinking alcohol, smoking and exercising.

Dominici said scientists are still trying to figure out which bits of pollution are the most lethal and called for a more targeted approach.

"The level of ambient pollution in the U.S. is much, much lower than it used to be, but we still find evidence of cancer and birth defects," she said. "The question is: How are we going to clean the air even further?"

## **Factfile on air pollutants**

Here is a factfile on health-damaging atmospheric pollutants, following a determination on Thursday by the World Health Organisation (WHO) that outdoor air pollution is a leading cause of cancer:

### **TOLL**

According to WHO estimates, urban outdoor air pollution causes 1.3 million deaths globally every year.

Nearly a quarter of a million of these deaths are caused by lung cancer.

### **PARTICULAR MATTER (PM)**

These are microscopic particles generated by coal, oil and forest fires,

but also by natural sources, including volcanoes and dust storms.

PM is so light that it can float on air. Some particles are so small that they can penetrate deep in the lungs and even cross into the bloodstream.

The components include sulphate, nitrates, ammonia, sodium chloride, carbon and mineral dust. They may also carry traces of heavy or toxic metals such as arsenic, cadmium, nickel and mercury.

Chronic exposure contributes to cardiovascular and respiratory diseases as well as lung cancer.

PM is divided into two categories: PM<sub>10</sub>, which comprises particles between 2.5 and 10 thousandths of a millimetre, or micrometres; and PM<sub>2.5</sub>, which is smaller than 2.5 micrometres—about a 30th the width of a human hair.

PM<sub>2.5</sub> is estimated to reduce life expectancy in the European Union by more than eight months, according to the European Environmental Agency (EEA).

Exposure to even low levels of PM<sub>2.5</sub> during pregnancy increases the risk of a baby with a low birthweight, The Lancet Respiratory Journal reported this week.

## OZONE (O<sub>3</sub>)

In the stratosphere, this triple-atom molecule of oxygen is naturally occurring and protects us from the Sun's ultra-violet radiation.

At ground level, where it is formed in a chemical reaction between sunlight and exhaust gases, ozone is a component of photochemical smog.

High ozone levels can cause breathing problems, trigger asthmatic attacks and worsen respiratory disease.

The EEA says half the EU population in urban areas may have been exposed to levels exceeding EU targets.

## OTHERS

Several other pollutants, also the residues of combustion or the result of reactions between exhaust and atmospheric gases, are a major concern:

They include the smog ingredient nitrogen dioxide (NO<sub>2</sub>); sulphur dioxide (SO<sub>2</sub>); carbon monoxide (CO); and a variety of heavy metals.

SOURCES: WHO, EAA, International Agency for Research on Cancer (IARC)

### **More information:**

[www.iarc.fr/en/publications/books/sp161/index.php](http://www.iarc.fr/en/publications/books/sp161/index.php)

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