

Study suggests reducing air-polluting PAHs may lower levels of lung cancer deaths

3 July 2013

(Medical Xpress)—High emissions of polycyclic aromatic hydrocarbons (PAHs) can be linked to lung cancer deaths in the United States and countries with a similarly high socioeconomic rank, including Canada, Australia, France, and Germany, according to a study by Oregon State University.

Researchers reviewed a range of information from 136 countries, including average [body mass index](#), gross domestic product per capita, the price of cigarettes, [smoking rates](#), and the amount of PAHs emitted into the air. PAHs are a group of more than 100 chemicals, some of which are carcinogenic when inhaled or ingested. They most commonly come from [vehicle exhaust](#) and burning coal and wood.

OSU researchers calculated how measures of health, wealth and pollution related to lung cancer deaths in each country.

"Analyzing data on a global scale revealed relationships between PAH emissions and smoking rates on the lung cancer death rates in each country," said Staci Simonich, a co-author of the study and toxicologist at OSU. "Ultimately, the strength of the relationships was determined by the country's [socioeconomic status](#)."

While the link between smoking and lung cancer is well-established, OSU researchers did not find a correlation between cigarette smoking rates and lung cancer death rates in countries with high levels of income. Researchers attribute this conclusion to previous studies showing high-income smokers tend to light up less often.

OSU's study also suggests that reducing smoking rates could significantly lessen lung cancer deaths in countries with a lower socioeconomic status, including North Korea, Nepal, Mongolia, Cambodia, Bangladesh and many others. Researchers found that lung [cancer mortality rates](#)

in these countries negatively correlated with price — meaning cheaper cigarettes are often associated with higher levels of deaths from lung cancer.

Detectable lung cancer can take 20 years to develop, and the poorest countries in the study had an average age of death of 54. OSU researchers suggest heavy smokers in these countries can sometimes die before tumors attributable to lung cancer become apparent.

"If the life expectancies were the same in all of the countries we reviewed, it's possible we would see a consistent relationship between PAH emissions and [lung cancer](#)," said Simonich, an OSU professor of environmental and molecular toxicology.

The study, "Association of Carcinogenic Polycyclic Aromatic Hydrocarbon Emissions and Smoking with Lung Cancer Mortality Rates on a Global Scale," was recently published in the journal *Environmental Science and Toxicology*.

The Pacific Northwest National Laboratories in Richland, Wash. assisted with calculating the statistical associations between data used in the study. The National Institutes of Environmental Health Sciences funded the research through OSU's Superfund Research Program.

Cancer is the second-leading cause of death worldwide. Lung cancer accounts for 12 percent of all cancer diagnoses and is the leading cancer killer of men and second among women, according to the American Cancer Society.

Provided by Oregon State University

APA citation: Study suggests reducing air-polluting PAHs may lower levels of lung cancer deaths (2013, July 3) retrieved 16 October 2021 from <https://medicalxpress.com/news/2013-07-air-polluting-pahs-lung-cancer-deaths.html>

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