

# Coal from mass extinction era linked to lung cancer mystery

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Coal from China's Xuan Wei County, widely used for cooking and heating, may contribute to unusually high rates of lung cancer among women in the region.  
Credit: US Department of Energy

The volcanic eruptions thought responsible for Earth's largest mass extinction — which killed more than 70 percent of plants and animals 250 million years ago — is still taking lives today. That's the conclusion of a new study showing, for the first time, that the high silica content of coal in one region of China may be interacting with volatile substances in the coal to cause unusually high rates of lung cancer. The study, which helps solve this cancer mystery, appears in ACS' *Environmental Science & Technology*.

David Large and colleagues note that parts of China's Xuan Wei County in Yunnan Province have the world's highest incidence of [lung cancer](#) in

nonsmoking women — 20 times higher than the rest of [China](#).

Women in the region heat their homes and cook on open coal-burning stoves that are not vented to the outside. Scientists believe that indoor emissions from burning [coal](#) cause cancer, but are unclear why the lung cancer rates in this region are so much higher than other areas. Earlier studies show a strong link between certain volatile substances, called PAHs, in coal smoke and lung cancer in the region.

The scientists found that coal used in parts of Xuan Wei County had about 10 times more silica, a suspected carcinogen, than U.S. coal. Silica may work in conjunction with PAHs to make the coal more carcinogenic, they indicate. The scientists also found that this high-silica coal was formed 250 million years ago, at a time when massive volcanic eruptions worked to deposit silica in the peat that formed Xuan Wei's coal.

**More information:** "Silica-Volatile Interaction and the Geological Cause of the Xuan Wei Lung Cancer Epidemic",  
[pubs.acs.org/stoken/presspac/p ... ll/10.1021/es902033j](https://pubs.acs.org/stoken/presspac/p...ll/10.1021/es902033j)

Provided by American Chemical Society

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