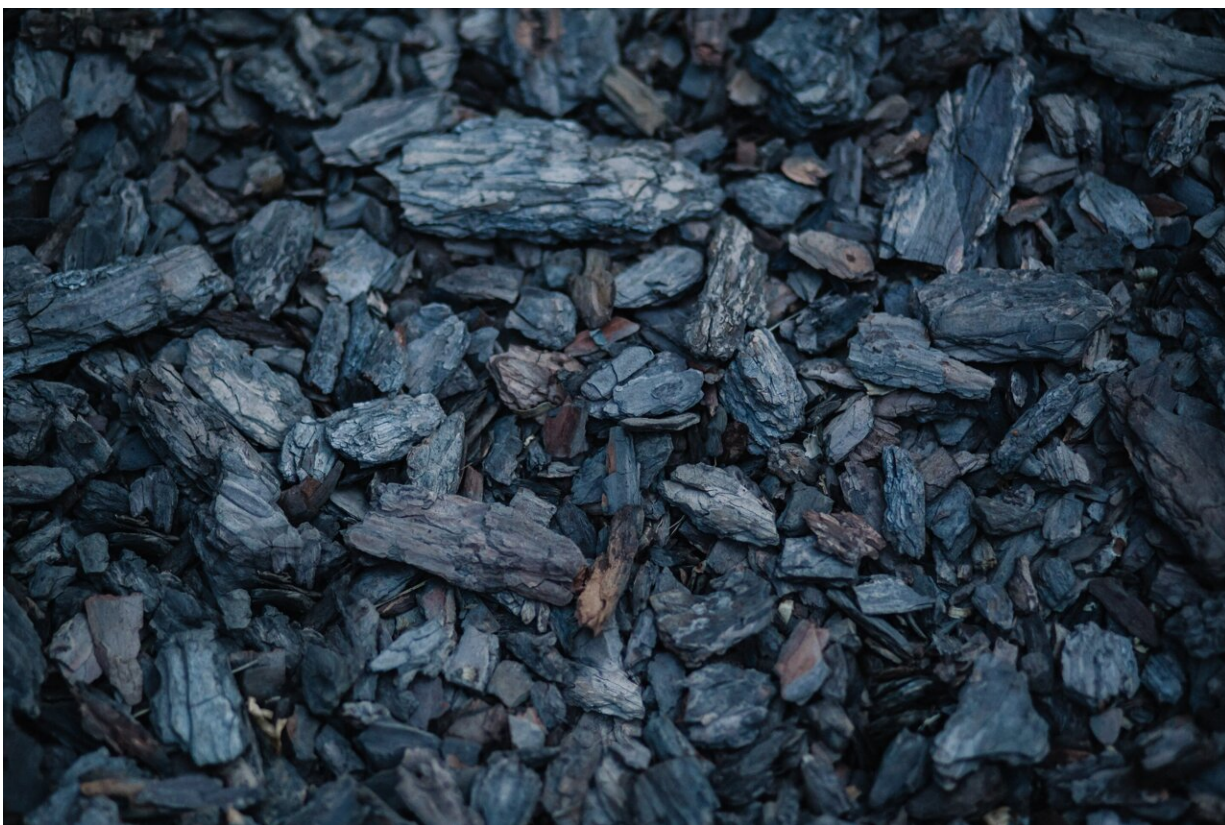


Residential coal use in China results in many premature deaths, models indicate

May 12 2021



Credit: Unsplash/CC0 Public Domain

Coal combustion by power plants and industry pollutes the air, causing many governments to implement mitigation actions and encourage cleaner forms of energy. Now, a new study in ACS' *Environmental*

Science & Technology indicates that in China, indoor air pollution from residential coal burning causes a disproportionate number of premature deaths from exposure to tiny, inhalable pollutants known as PM_{2.5}.

In China, coal is still the largest source of energy, although recent mitigation actions have replaced some coal-fired [power plants](#) with petroleum- or natural gas-powered plants. Also, many coal-fired power plants and industrial boilers have installed equipment that reduces emissions. However, some households continue to use coal for heating and cooking, especially in [rural areas](#), and the health impacts of this indoor PM_{2.5} exposure compared with other forms of indoor and outdoor exposure are largely unknown. Therefore, Shu Tao and colleagues wanted to quantify health risks of exposure to indoor and outdoor PM_{2.5} from coal used in the power, industrial and residential sectors in China from 1974 to 2014.

The researchers compiled data on coal consumption by power plants, industry, and rural and urban residences over the 40-year period. Using atmospheric chemical transport and statistical models, they calculated outdoor and indoor PM_{2.5} levels. Then, the team used exposure response functions—mathematical relationships that calculate health effects resulting from specific exposures—to estimate premature deaths caused by five diseases associated with PM_{2.5}, including lung cancer and heart disease. From 1974 to 2014, the contribution of indoor residential coal use to overall PM_{2.5} exposure decreased in urban populations but remained steady in rural populations. The researchers calculated that in 2014, residential coal accounted for 2.9% of [total energy use](#) in China but 34% of premature deaths associated with PM_{2.5}. The number of premature deaths caused by unit coal consumption in the residential sector was 40 times higher than that in the power and industrial sectors.

These results indicate that efforts to reduce residential coal use should be a key focus of future air pollution mitigation actions in China, the

researchers say.

More information: "Coal Is Dirty, but Where It Is Burned Especially Matters" *Environmental Science & Technology* (2021).

pubs.acs.org/doi/abs/10.1021/acs.est.1c01148

Provided by American Chemical Society

Citation: Residential coal use in China results in many premature deaths, models indicate (2021, May 12) retrieved 8 August 2024 from <https://phys.org/news/2021-05-residential-coal-china-results-premature.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.