

The costs of coal storage and its impact on disadvantaged communities

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While the negative health and environmental effects of mining and burning coal are well documented, simply transporting and storing coal can also adversely affect the health outcomes of individuals living near coal-fired power plants. New research explores the health and environmental costs of coal storage and transportation, finding that increases in the level of coal stockpiles held by U.S. power plants increase local air pollution levels, which in turn increases the average infant and adult mortality rates in the communities near these plants.

The new *National Bureau of Economic Research* working paper, "Handle with Care: The Local Air Pollution Costs of Coal Storage," was written by Akshaya Jha of Carnegie Mellon University's Heinz College and Nicholas Muller of Middlebury College.

"Despite the thicket of environmental regulations relevant to coal, our paper uncovers an as yet unstudied dimension of coal use that we argue requires policy intervention—the environmental consequences of the coal purchase and storage behavior of U.S. [power plants](#)," said Jha.

Jha and Muller utilized monthly, plant-level data on coal purchases and stockpiles provided by the Energy Information Administration as well as air quality data from the Environmental Protection Agency for the period of 2002 to 2012 to determine how coal stockpiles affect concentration of fine particulates (PM2.5) within 25 miles of coal [plants](#). They assessed how increases in PM2.5 affect [mortality rates](#) by studying mortality data provided by the Centers for Disease Control and

Prevention. Using these data, they estimated that a 10 percent increase in coal stockpiles led to a 0.07 percent increase in air pollution for communities up to 25 miles away from [coal plants](#). They next demonstrated that a 10 percent increase in PM2.5 levels causes average adult mortality rates to rise by 1.1 percent and average infant mortality rates to rise by 6.6 percent in those communities.

Finally, the authors combined their estimates for the effect of coal transportation and storage on PM2.5 and the effect of PM2.5 on mortality rates to calculate the local air pollution costs of coal procurement to areas around [power](#) plants. They determined that the local environmental cost of PM2.5 increases is \$182.67 per ton of coal stockpiled and the local air pollution cost per ton of coal delivered is \$202.51. To put these figures in perspective, the average U.S. coal-fired power plant pays \$48.00 per ton for coal, stockpiles 212,781.6 tons of coal and has 106,235 tons of coal delivered to it each month.

The authors' results suggest that most of the local air pollution costs of coal procurement and storage are borne by the communities within 25 miles of a coal plant. As stated in the paper: "as people living in census tracts with power plants have lower per-capita incomes and educational attainment on average relative to residents of census tracts without power plants, the highly localized environmental costs of coal procurement disproportionately affect economically disadvantaged communities."

The authors propose low-cost policy solutions that might help mitigate these negative effects. Requiring that coal stockpiles and railcars containing coal be covered is a less expensive and unobtrusive way to reduce PM2.5 levels and reduce the environmental costs. "These types of policies should be easier to implement relative to global anti-pollution policy initiatives since jurisdictions do not need to coordinate with one another," said Jha. "Given that the local environmental [costs](#) of coal

storage and handling are incurred primarily by communities living near [coal](#)-fired power plants, we hope that local policymakers will consider these simple and easy solutions."

Provided by Carnegie Mellon University

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