



## MANAGING CHINA'S PETCOKE PROBLEM

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Petroleum coke (petcoke), a by-product of petroleum refining that is high in contaminants, has quietly emerged in China as an inexpensive, but very dirty, alternative to coal. A significant share of the petcoke used in China is imported from the United States, where it is generally considered waste. The Chinese government is committed to reducing coal consumption for environmental reasons, but petcoke is not yet well-known to the country's policymakers. Still, its use and resulting emissions must be addressed if efforts to reduce air pollution and climate change are to be effective.

### Petcoke and Its Use in China

- Petcoke is a bottom-of-the-barrel residue produced from refining heavy oils with varying sulfur contents.
- Low-sulfur petcoke is widely used in metal manufacturing, while high-sulfur petcoke is burned to generate power and heat.
- Increasing amounts of high-sulfur petcoke are being produced by the growing number of complex refineries for extra-heavy oils from Canada and Venezuela. Chinese production is growing as the country imports more heavy and sour crude oil from the Middle East and South America.
- Petcoke has higher greenhouse gas emissions than coal or natural gas that have not historically been accounted for in assessments of the climate impacts of extra-heavy oils.
- About 33 million metric tons of petcoke were consumed in China in 2013. The United States exported 7 million metric tons of petcoke to China that year—20 times the amount exported five years earlier—accounting for nearly 75 percent of Chinese petcoke imports.
- A lack of information about petcoke use and its sulfur dioxide emissions poses a significant hurdle to China's efforts to regulate the substance, and to its broader attempts to reduce air pollution.

### What China Can Do to Control Petcoke and Its Effects

**Monitor the flow and use of petcoke.** Effective regulation requires better data on the amount of petcoke consumed, where it is consumed, and in what kind of boilers it is combusted. Open, transparent statistics on resulting emissions are also essential.

**Employ economic instruments to internalize environmental costs.** Import tariffs, carbon pricing, and other policies could discourage the use of petcoke. China's carbon trading pilot scheme and its planned national carbon market should include emissions from petcoke.

**Promote cleaner technologies for petcoke combustion.** Technologies such as circulating fluidized bed (CFB) boilers and emissions controls should be mandated to reduce sulfur dioxide and other pollutants.

**Manage petroleum residues.** In the long term, refineries should be required to install low-emitting hydrogenation systems that convert petroleum residues into more valuable liquids and reduce the output of petcoke.

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