

China's Trash Incinerators Loom as Global Pollution Hazard

Timothy O'Rourke for The New York Times

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In this sprawling metropolis in southeastern China stand two hulking brown buildings erected by a private company, the Longgang trash incinerators. They can be smelled a mile away and pour out so much dark smoke and hazardous chemicals that hundreds of local residents recently staged an all-day sit-in, demanding that the incinerators be cleaner and that a planned third incinerator not be built nearby.

After surpassing the United States as the world's largest producer of household garbage, China has embarked on a vast program to build incinerators as landfills run out of space. But these incinerators have become a growing source of toxic emissions, from dioxin to mercury, that can damage the body's nervous system. And these pollutants, particularly long-lasting substances like dioxin and mercury, are dangerous not only in China, a growing body of atmospheric research based on satellite observations suggests. They float on air currents across the Pacific to American shores. Chinese incinerators can be better.

At the other end of Shenzhen from Longgang, no smoke is visible from the towering smokestack of the Baoan incinerator, built by a company owned by the municipal government. Government tests show that it emits virtually no dioxin and other pollutants. But the Baoan incinerator cost 10 times as much as the Longgang incinerators, per ton of trash-burning capacity. The difference between the Baoan and Longgang incinerators lies at the center of a growing controversy in China. Incinerators are being built to wildly different standards across the country and even across cities like Shenzhen. For years Chinese government regulators have discussed the need to impose tighter limits on emissions. But they have done nothing because of a bureaucratic turf war, a Chinese government official and Chinese incineration experts said. The Chinese government is struggling to cope with the rapidly rising mountains of trash generated as the world's most populated country has raced from poverty to rampant consumerism. Beijing officials warned in June that all of the city's landfills would run out of space within five years.

The governments of several cities with especially affluent, well-educated citizens, including Beijing and Shanghai, are setting pollution standards as strict as Europe's. Despite those standards, protests against planned incinerators broke out this spring in Beijing and Shanghai as well as Shenzhen. Increasingly outspoken residents in big cities are deeply distrustful that incinerators will be built and operated to international standards. "It's hard to say whether this

standard will be reached - maybe the incinerator is designed to reach this benchmark, but how do we know it will be properly operated?" said Zhao Yong, a computer server engineer who has become a neighborhood activist in Beijing against plans for an incinerator there. Yet far dirtier incinerators continue to be built in inland cities where residents have shown little awareness of pollution.

Studies at the University of Washington and the Argonne National Laboratory in Argonne, Ill., have estimated that a sixth of the mercury now falling on North American lakes comes from Asia, particularly China, mainly from coal-fired plants and smelters but also from incinerators. Pollution from incinerators also tends to be high in toxic metals like cadmium. Incinerators play the most important role in emissions of dioxin. Little research has been done on dioxin crossing the Pacific. But analyses of similar chemicals have shown that they can travel very long distances. A 2005 report from the World Bank warned that if China built incinerators rapidly and did not limit their emissions, worldwide atmospheric levels of dioxin could double. China has since slowed its construction of incinerators and limited their emissions somewhat, but the World Bank has yet to do a follow-up report. Airborne dioxin is not the only problem from incinerators. The ash left over after combustion is laced with dioxin and other pollutants. Zhong Rigang, the chief engineer at the Baoan incinerator here, said that his operation sent its ash to a special landfill designed to cope with toxic waste.

An academic paper last year by Nie Yongfeng, a Tsinghua University professor and government adviser who sees a need for more incinerators, said that most municipal landfills for toxic waste lacked room for the ash, so the ash was dumped. Trash incinerators have two advantages that have prompted Japan and much of Europe to embrace them: they occupy much less real estate than landfills, and the heat from burning trash can be used to generate electricity. The Baoan incinerator generates enough power to light 40,000 households. And landfills have their own environmental hazards. Decay in landfills also releases large quantities of methane, a powerful global warming gas, said Robert McIlvaine, president of McIlvaine Company, an energy consulting firm that calculates the relative costs of addressing disparate environmental hazards. Methane from landfills is a far bigger problem in China than toxic pollutants from incinerators, particularly modern incinerators like those in Baoan, he said. China's national regulations still allow incinerators to emit 10 times as much dioxin as incinerators in the European Union; American standards are similar to those in Europe. Tightening of China's national standards has been stuck for three years in a bureaucratic war between the environment ministry and the main economic planning agency, the National Development and Reform Commission, said a Beijing official who insisted on anonymity because he was not authorized to discuss the subject publicly. The agencies agree that tighter standards on dioxin emissions are needed. They disagree on whether the environment ministry should have the power to stop incinerator projects that do not meet tighter standards, the official said, adding that the planning agency wants to retain the power to decide which projects go ahead. Yan Jianhua, the director of the solid waste treatment expert group in Zhejiang province, a center of incinerator equipment manufacturing in China, defended the industry's record on dioxin, saying that households that burn their trash outdoors

emit far more dioxin. "Open burning is a bigger problem according to our research," Professor Yan said, adding that what China really needs is better trash collection so that garbage can be disposed of more reliably. Critics and admirers of incinerators alike call for more recycling and reduced use of packaging as ways to reduce the daily volume of municipal garbage. Even when not recycled, sorted trash is easier for incinerators to burn cleanly, because the temperature in the furnace can be adjusted more precisely to minimize the formation of dioxin. Yet the Chinese public has shown little enthusiasm for recycling. As Mr. Zhong, the engineer at the Baoan incinerator, put it, "No one really cares."

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