EPA Loopholes Allow Biomass to Emit More Toxic Air Pollutants Than Coal, Study Says

Study finds air emissions from biomass facilities could be dramatically improved if socalled loopholes are closed in power plant regulations.

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Biomass plants, like the one pictured here in

Burlington, Vt., can be a major source of greenhouse gas and other air pollution, according to a new study. Credit: David Parsons, NREL

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A new study charges that government regulations for biomass plants are riddled with loopholes that allow wood-burning facilities to spew more toxic emissions in the air than coal-fired power plants.

The findings are refueling a controversy over whether biomass should be treated as a renewable energy fuel and able to qualify for green incentives, or as a fossil fuel like coal.

The <u>study</u>, conducted by the Massachusetts-based <u>Partnership for Policy Integrity (PFPI)</u>, found that biomass facilities release as much as 50 percent more carbon dioxide than coal plants per megawatt-hour, and as much as 100 percent more than other air pollutants. The contaminants include carbon monoxide, nitrogen oxides, particulate matter and volatile organic compounds (VOCs).

Biomass plant emissions "could be dramatically improved," said Mary Booth, the study's author who is the director of PFPI, a nonprofit environmental consultancy critical of biomass plants. She pinned the problem on so-called loopholes in federal and state environmental laws, which she said give biomass operators a way out of meeting strict standards.

After reviewing nearly half of the air permits for biomass plants proposed and built since 2009, Booth identified seven such loopholes. They include: EPA giving biomass plants a "free pass" on limiting CO2

emissions; states not requiring operators to control short-term air emissions spikes at smaller facilities; and states not mandating extra monitoring at plants that burn wood waste, which emit more toxic pollutants.

One of the worst loopholes, Booth said, has to do with how biomass is treated by the EPA compared to coal.

Under the Clean Air Act, major emitters of air pollutants must obtain <u>Prevention of Significant</u> <u>Deterioration (PSD)</u> permits that require EPA oversight, public involvement in the permitting process and installation of the best pollution control technologies. Biomass plants that emit at least 250 tons of a pollutant per year have to seek the stricter permits, whereas coal plants only have to emit 100 tons of the same pollutant annually to trigger federal permitting. Nearly all of the facilities in Booth's review emit 100 tons of at least one pollutant.

According to Booth and other biomass critics, biomass should be regulated the same way as coal.

"We're talking about the same pollution, the same health effects, but biomass plants get to emit two and a half times as much," said Booth, who has a Ph.D. in ecology.

EPA spokespeople didn't comment on the study's findings by deadline.

Biomass, which is mainly wood chips, forest debris and waste, is considered renewable power by the Department of Energy. It is the <u>third-largest renewable electricity source</u> behind wind and hydropower, according to the agency.

The <u>Biomass Power Association</u>, the industry trade group, called the report an "81-page editorial" that misconstrues state and federal regulations. "This report uses poorly understood science to stoke fears. ... The end result of studies like this is that, if they are taken as fact, more fossil fuels will be used for power" as biomass becomes less attractive, BPA said. The study is based on a review of existing research and original analysis.

Seven environmental groups including Clean Air Task Force, Center for Biological Diversity, Earthjustice, Greenpeace, Massachusetts Sierra Club, Natural Resources Defense Council and Southern Environmental Law Center supported the report.

Sami Yassa, a senior scientist and forestry specialist at NRDC said it was "a significant new contribution to our understanding of the pollution impacts" of the biomass industry. "Using data from biomass power plant permits themselves, the analysis shows that even the cleanest of biomass power plants can emit certain pollutants such as nitrogen oxides and particulates at levels higher than coal," he said.

A Critical Time

The study comes at a critical time for the biomass industry.

In 2010, the EPA rolled out rules to regulate CO2 as it does other dangerous pollutants. The regulations require coal plant operators and other major emitters to add costly carbon capture technology to newly built facilities, effectively dooming their construction.

In 2011, the EPA deferred a decision on whether to regulate CO2 emissions from biomass facilities for three years, until July 2014, in order to more rigorously study the fuel's carbon footprint.

EPA spokeswoman Julia Valentine said the agency hopes to complete this process by the end of the year, and that the decision will be informed by scientific experts. "Any future rulemaking will be guided by a revised EPA biogenic carbon accounting framework, as informed by the Science Advisory Board recommendations and technical input from stakeholders," she said.

A decision to treat biomass the same as other sources of greenhouse gases would have severe implications for the industry. If a biomass plant emits at least 100,000 tons of CO2 a year, the EPA threshold, it could be subject to strict PSD permitting requirements for all of its pollutants, not just CO2, according to Booth. The biomass industry "desperately wants to avoid PSD permitting," she said.

More generally, the move could deliver a reputational and financial blow to a fuel source touted as a solution to climate change. The technology qualifies as a clean-burning power under most state renewable portfolio policies, making it eligible for subsidies and incentives.

The biomass industry fiercely opposes regulating the industry's CO2 emissions, arguing that the carbon cycle associated with converting biomass into electricity is different from that associated with making coal power. EPA's carbon accounting is currently based on smokestack emissions—not emissions across a fuel's lifecycle. Under that simple accounting, biomass-to-energy is a climate-neutral process, according to the industry. That's because before being burned for fuel, the trees and plants pull carbon out of the air, offsetting their emissions later.

"The science of greenhouse gases from biogenic sources like wood is undeniably and fundamentally different than the sciences of gases from geologic sources," the Biomass Power Association said in a statement.

Communities Their Own Advocates

The Partnership for Policy Integrity is not the first group to demonstrate that biomass facilities are potentially bad for global warming. A <u>study commissioned in 2010 by the Massachusetts Department of Energy Resources</u> found that certain biomass technologies produce 25 percent more CO2 lifecycle emissions per megawatt-hour than coal and nearly 60 percent more than natural gas.

Conducted by the Manomet Center for Conservation Sciences, that report prompted Massachusetts to adopt some of the strictest state-level standards for biomass incinerators in the country. They include requiring operators of medium to large plants to perform "best available control technology" analyses to identify ways to reduce emissions. Massachusetts also made it more difficult for biomass plants to qualify for renewable subsidies.

The new report, called "Trees, Trash and Toxics: How Biomass Energy Has Become the New Coal," is the first to look at biomass plant emissions across the board, from carbon dioxide to small particulates.

Moreover, the study is one of the first to demonstrate that operators of biomass plants may be underestimating their projected emissions to avoid tougher federal regulation. According to one of Booth's loopholes, owners frequently estimate that their facilities will emit as much as 249 tons of a certain pollutant per year in their state permit applications—just shy of the 250 limit that would trigger federal oversight. What's missing from their permits are any plans for limiting the short-term emissions spikes that happen during maintenance, shutdown and startup.

"The absence of short-term emission limits in [state] permits is a threat to air quality. Biomass plants are notorious for producing large slugs of air pollution over short periods," the report said.

According to Booth, typically it takes community members complaining about high pollution for a plant to get caught emitting beyond the 250-ton threshold. This happened in California in 2011, when a complaint prompted a federal EPA review of two biomass plants, one located in Madera County and the other in Merced County. The agency found dangerous levels of nitrogen oxides and carbon monoxide, as well as poor emissions testing. The owner, Global Ampersand, was slammed with a roughly \$820,000 fine, one of the largest EPA penalties for air pollution ever levied in California.

Three years ago, the EPA weighed in on a state permitting process for a biomass facility in Hawaii. The community near the proposed plant complained that the company had not disclosed in its permit how it would track short-term emissions. The EPA sided with the community, requiring the company to disclose how it would monitor and control short-term emissions spikes.

Booth said many communities don't trust the current regulations over biomass to protect them. "They can't count on the air permitting process to ensure that bioenergy pollution is minimized," she said.