

Dirty Kilowatts

America's Most Polluting Power Plants

[Exerpts]

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The Environmental Integrity Project (EIP) is a nonpartisan, nonprofit organization dedicated to more effective enforcement of environmental laws and to the prevention of political interference with those laws. EIP was founded by Eric Schaeffer, who directed the U.S. Environmental Protection Agency's Office of Regulatory Enforcement until 2002. EIP's research and reports shed light on how environmental laws affect public health.

SO₂

Health and Environmental Effects

Power plants, especially those that burn coal, are by far the largest single contributor of SO₂ pollution in the United States, accounting for approximately 67 percent of all SO₂ emissions nationwide.⁴ Sulfates (from SO₂) are major components of the fine particle pollution that plagues many parts of the country, especially communities nearby or directly downwind of coal-fired power plants. Sulfur dioxide also interacts with NO_x to form nitric and sulfuric acids, commonly known as acid rain, which damages forests and acidifies soil and waterways.⁸ Harvard School of Public Health studies have shown that SO₂ emissions from power plants significantly harm the cardiovascular and respiratory health of people who live near the plants. According to EPA studies, fine particle pollution from power plants causes more than 20,000 premature deaths a year. In April 2005, EPA took final action to designate 177 counties and 31 partial counties – home to more than 100 million Americans – as “nonattainment” for health-based fine particle pollution standards.⁵

CO₂

Carbon dioxide, one of several greenhouse gases that contributes to climate change, is released into the atmosphere when fossil fuels (oil, natural gas, and coal), wood, and solid waste are burned. Power plants are responsible for about 40 percent of all man-made CO₂ emissions in the nation,¹² and unlike emissions of SO₂ and NO_x, the electric power industry's CO₂ emissions are steadily rising. Power plant CO₂ emissions are directly linked to the efficiency with which fossil fuels are converted into electricity, and coal-fired power plants are inherently inefficient. According to EIA, in a typical power plant, only about a third of the energy contained in coal is converted into electricity, while the

remainder is emitted as waste heat.¹³ In fact, coal-fired power plant efficiency has remained largely unchanged since the mid 1960's.

NO_x

Electric utilities account for 22 percent of all NO_x emissions in the U.S.¹⁵ Ground-level ozone, which is especially harmful to children and people with respiratory problems such as asthma, is formed when NO_x and volatile organic compounds (VOCs) react in sunlight. NO_x also reacts with ammonia, moisture, and other compounds to form fine particle pollution, which damages lung tissue and is linked to premature death. Small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease such as emphysema and bronchitis, and aggravate heart disease.

NO_x also increases nitrogen loading in water bodies, especially in sensitive coastal estuaries. Too much nitrogen accelerates eutrophication, which leads to oxygen depletion and kills fish. According to EPA, NO_x emissions are one of the largest sources of nitrogen pollution in the Chesapeake Bay.¹⁶

Mercury

Coal-fired power plants are the single largest source of mercury air pollution, accounting for roughly 40 percent of all mercury emissions nationwide.²⁰ Mercury is a highly toxic metal that, once released into the atmosphere, settles in lakes and rivers, where it moves up the food chain to humans. The Centers for Disease Control has found that roughly 10 percent of American women carry mercury concentrations at levels considered to put a fetus at risk of neurological damage.²¹