

POWER PLANT MERCURY AND AIR TOXICS STANDARDS

Overview of Proposed Rule and Impacts

ACTION

On March 16, 2011, the Environmental Protection Agency (EPA) proposed the first national standard to reduce mercury and other toxic air pollution from coal and oil-fired power plants. This document provides an overview of the benefits of the proposed clean air standards and highlights key facts and impacts associated with them.

BACKGROUND

- This proposed rule is developed under section 112 of the Clean Air Act (CAA), provisions that set standards to reduce air pollution from coal- and oil-fired power plants.
- Most notably, this proposal sets technology-based emissions limitation standards for mercury and other toxic air pollutants, reflecting levels achieved by the best-performing sources currently in operation.
- Existing sources have up to four years to comply with these standards; all existing sources must comply in three years, but individual sources can obtain an additional year if technology cannot otherwise be installed in time.
- The regulations issued today are under a Consent Decree of the D.C. Court of Appeals requiring EPA to issue a proposal by this date, and a final rule in November 2011.

POWER PLANT EMISSIONS

- There are about 1,350 coal and oil-fired units at 525 power plants that emit harmful pollutants including mercury, arsenic, other toxic metals, acid gases, and organic air toxics including dioxin.
- In 1990, three industry sectors made up approximately two-thirds of total U.S. mercury emissions: medical waste incinerators, municipal waste combustors, and power plants. Two of those sectors are now subject to standards and have reduced their mercury emissions by more than 95 percent. In addition, mercury standards for other industries, such as cement production and steel manufacturing, have reduced mercury emissions from a wide range of sources.
- Power plants are the dominant emitters of mercury (50 percent), acid gases (over 50 percent) and many toxic metals (over 25 percent) in the United States. Despite the availability of proven control technologies, and the more than 20 years since the 1990 CAA Amendments passed, there are still no existing federal standards that require power plants to limit their emissions of toxic air pollutants like mercury, arsenic and metals.
- These standards are long overdue. In 2000, after years of study, EPA issued a scientific and legal determination that it was “appropriate and necessary” to control mercury emissions from power plants. The prior administration finalized a rule to cut mercury pollution from power plants but the D.C. Circuit struck the rule down as illegal and required EPA to develop standards that follow the law and the science in order to protect human health and the environment.

- While newer, and a significant percentage of older, power plants already control their emissions of mercury, heavy metals, and acid gases, about half of the current electric generating units (EGUs) still do not have advanced pollution control equipment.

EMISSION REDUCTIONS RESULTING FROM COMPLIANCE WITH THE PROPOSED STANDARDS

The proposed rule establishes emission standards for mercury, acid gases (hydrochloric acid, or HCl, as a surrogate), and non-mercury metallic toxic pollutants (total particulate matter (PM) as a surrogate with alternative surrogate of total metal air toxics), and each year would:

- Prevent 91 percent of the mercury in coal burned in power plants from being emitted to the air;
- Reduce acid gas emissions from power plants by 91 percent; and
- Reduce sulfur dioxide (SO₂) emissions from power plants by 55 percent.

HEALTH BENEFITS OF THE PROPOSED STANDARDS

- By updating safeguards under the Clean Air Act to reduce mercury, acid gases, and other life-threatening pollution in our air, EPA is acting to protect our health and our families from the illnesses—and premature deaths—linked to these pollutants.
- Uncontrolled releases of toxic air pollutants like mercury from power plants damage children’s developing brains, reducing their IQ and their ability to learn.
- They cause a range of dangerous health problems in adults as well, including cancer, heart disease and premature death. Mercury and many of the other air toxics also pollute our nation’s lakes, streams, and rivers. Fish advisories have been issued across the US as a result of mercury contamination.
- The proposed standards will have direct benefits to neighborhoods near power plants as well as neighborhoods hundreds of miles away from the nearest power plant.
- Each year the standards will prevent serious illnesses and health problems for thousands of Americans, including: up to 17,000 premature deaths, 11,000 heart attacks, 120,000 asthma attacks, 12,200 hospital and emergency room visits, 4,500 cases of chronic bronchitis, and 5.1 million restricted activity days.
- The value of the air quality improvements totals \$59 billion to \$140 billion each year. That means that for every dollar spent to reduce this pollution, Americans get \$5-13 in health benefits.
- The benefits are widely distributed and are especially important to minority and low income populations who are disproportionately impacted by asthma and other debilitating health conditions.

INVESTMENTS THAT KEEP PEOPLE WORKING AND CREATE JOBS

- Each year, 850,000 missed work or “sick” days will be avoided, enhancing productivity, lowering health care costs for American families.
- Money spent on pollution control at power plants creates high-quality American jobs in manufacturing steel, cement and other materials needed to build pollution control equipment, in creating and assembling pollution control equipment, in installing the equipment at power plants, and operating and maintaining the equipment once it is installed.
- EPA estimates this proposed rule will provide employment for thousands by supporting 31,000 short-term construction jobs and 9,000 long-term utility jobs.

- The standards will maintain fuel diversity:
 - Coal-fired generation becomes much cleaner with little effect on its role as the major generator of U.S. electric power.
 - EPA's modeling shows that plants totaling less than 10 GW of the nation's coal-fired capacity (not generation) are expected to retire by 2015 rather than invest in control technologies, which represents about a 2 percent decrease in coal-fired generation. The plants that are expected to retire are primarily the smaller, less efficient and higher polluting units that are not used much.

REGULATORY CERTAINTY AND A LEVEL PLAYING FIELD FOR CLEANER ENERGY SOURCES

- These updated and long overdue Clean Air Act standards will provide regulatory certainty, opening up opportunities for investment.
- These proposed standards will result in the upgrading of existing controls (in particular PM controls like electrostatic precipitators or ESPs) and the installation of good engineering controls (including dry sorbent injection or DSI) – all of which is achievable by the 2015 compliance timeline.
- History has shown that power plants can install controls well within the timeframes required by the Clean Air Act. From 2001 to 2003, 150 GW of new generation was built; from 2008 to 2010, about 20 GW of scrubbers was installed each year. The proposed standards will level the playing field so that all power plants will have to limit their emissions of mercury as plants in some states already do. Installing these widely-available controls will help modernize the aging fleet of uncontrolled power plants, most of which are over 30 years old and many of which are over 50 years old.
- EPA modeling indicates that these proposed standards will result in relatively small changes in the average retail price of electricity, primarily due to increased demand for natural gas-keeping electricity prices below 1990 levels.
- This translates into a 1.3 percent increase in residential natural gas prices and a consumer electricity price increase of approximately \$3-4 per month.
- In addition to the proposed standards for toxic air pollutants, EGUs are the subject of other rulemakings, addressing the interstate transport of emissions contributing to ozone and particulate matter air quality problems, coal combustion wastes, cooling water control requirements and greenhouse gas emissions. To the full extent that the agency's legal obligations permit, EPA plans to take into account the combined effects of these upcoming actions on the industry in its decision-making process, and to approach these rulemakings in ways that allow the industry to make practical, integrated compliance decisions that minimize costs while still achieving the fundamentally important public health and environmental benefits intended under the Clean Air Act.

COMPLIANCE PLANNING, SYSTEM RELIABILITY AND LOW COST ELECTRICITY

- EPA, FERC and DOE will work with entities whose responsibility is to ensure an affordable, reliable supply of electricity, including State Utility Commissions, Regional Transmission Organizations (RTOs), the National Electric Reliability Council (NERC) to share information and encourage them to begin planning for compliance and reliability as early as possible.

- Early planning and actions to spur or support early planning by power companies, utility regulators and system operators can do much to ensure orderly, affordable compliance with the standards.
- EPA modeling indicates that including energy efficiency investments that achieve moderate levels of energy demand reduction in compliance strategies will:
 - Cut substantially total emissions control costs for the power sector;
 - Lower the incremental cost of the standards by more than half in 2020;
 - Lower consumer bills; and
 - Reduce emissions of air pollutants beyond what the standards would achieve, especially on high electricity demand days when air quality is most threatened.

KEY FEATURES OF THE PROPOSED RULE

- Emissions standards set under the toxics program are federal air pollution limits that individual facilities must meet by a set date. EPA must set emission standards for existing sources in the category that are at least as stringent as the emission reductions achieved by the average of the top 12 percent best controlled sources. EPA must establish standards for all listed hazardous air pollutants (HAPs) emitted from each industry category.
- The proposed rule sets standards – based on the best-performing controls currently in operation – for all HAPs emitted by coal and oil-fired EGUs with a capacity of 25 megawatts or greater. All regulated EGUs are considered major. EPA did not identify any size, design or engineering distinction between major and area sources in this category
- EPA is proposing to subcategorize:
 - A certain class of coal-fired boilers located at mine mouths that are generally designed to burn lignite coal. The mercury limit in this subcategory is based on “beyond the floor” emission reduction opportunities because EPA analysis shows that better controls are widely available and affordable.
 - Solid and liquid oil units because even though petroleum coke is derived from oil, it is a solid fuel and cannot be burned in a liquid oil-fired boiler.
- EPA is not proposing less-stringent alternative standards (called “health-based emissions limits” or HBEL), which the Administrator has the discretion to consider if she determines that an HBEL will mandate reductions sufficient to protect individuals most exposed to toxic pollutants. The many HAPs EGUs emit in high amounts negate the basis for adopting this less stringent approach.
- EPA is not proposing a separate subcategory for coal refuse units (aka “waste coal”) because our analysis did not indicate that such subcategorization was necessary or warranted.
- EPA is providing flexibility by allowing facility-wide averaging for all HAPs emissions from existing units within the same subcategory. This will allow equivalent, less costly way of achieving emissions standards.
- The proposed rule takes advantage of state-of-the-art high quality monitoring:
 - CEMs for numeric standards (mercury, HCl or SO₂, and PM)
 - Emissions testing, parameter monitoring, and fuel analyses allowed for metals and acid gases; sorbant traps allowed for mercury
 - Thirty day averaging period to accommodates process variability and, coupled with CEMS, facilitates compliance
- The proposed standards will establish achievable numerical emission limits for mercury, PM (as the surrogate for non-mercury metals, with options for measuring the metals) and

hydrogen chloride (as the surrogate for acid gases with an option for measuring SO₂, or the individual acid gases).

- Records of work practice standards are proposed for organic HAP emissions to ensure proper combustion which prevents formation of organic HAPs, and in recognition of current low levels of emissions near detection limits.