Congressional Research Service
Informing the legislative debate since 1914

IN FOCUS

January 18, 2019

EPA Reconsiders Basis for Mercury and Air Toxics Standards

In late 2018, the U.S. Environmental Protection Agency (EPA) proposed to reverse its previous determinations that limits on hazardous air pollutants from coal- and oil-fired power plants are "appropriate and necessary" under Clean Air Act (CAA) Section 112(n) (EPA, "Reconsideration of Supplemental Finding and Residual Risk and Technology Review," December 27, 2018) (hereinafter, "A&N proposal"). While the A&N proposal would not revoke the mercury and acid gas emissions limits established in the 2012 Mercury and Air Toxics Standards (MATS) Rule, it has raised questions about whether EPA will take additional action on MATS.

The A&N proposal also reveals changes in EPA's interpretation of the CAA and use of benefit-cost analysis. EPA's analysis for the 2018 A&N proposal excludes co-benefits—the human health benefits from reductions in pollutants not targeted by MATS—from its consideration of whether MATS is "appropriate and necessary" under CAA Section 112(n). With this exclusion, the 2018 analysis finds that monetized costs outweigh monetized benefit estimates by several orders of magnitude. EPA previously determined—in 2000, 2012, and 2016—that it was appropriate and necessary to regulate hazardous air pollutants from power plants. EPA's 2011 MATS analysis counted co-benefits and concluded that the rule's benefits outweighed the costs. This In Focus provides background on MATS, discusses EPA's reconsideration of benefits and costs, and concludes with potential issues for Congress. A detailed summary of the proposal and legal issues is beyond the scope of this product.

Background

Hazardous air pollutants (HAPs), also known as air toxics, are pollutants known or suspected to cause cancer or other serious health effects, such as reproductive issues or birth defects. Among the HAPs emitted by power plants, mercury has been the principal HAP of concern. Mercury is a neurotoxin that travels through the air to water, where it is converted to methylmercury, which moves through the food chain as larger organisms consume smaller ones. Consumption of fish and shellfish contaminated with methylmercury is the primary source of mercury exposure for humans. Fetuses and children are particularly vulnerable to methylmercury, which may impair neurological development. Mercury exposure at high levels may also harm the brain, heart, kidneys, lungs, and immune system (EPA, "Basic Information about Mercury").

The CAA Amendments of 1990 required EPA to study the "hazards to public health reasonably anticipated to occur" from HAPs emitted by coal- and oil-fired power plants, after imposition of other CAA requirements (42 U.S.C. §7412(n)). It also required EPA to examine the health and environmental effects of mercury emissions from these sources and available control technologies and their costs, and to determine whether regulation of power plant HAPs was "appropriate and necessary" (42 U.S.C. §7412(n)).

In 2000, EPA determined that it was "appropriate and necessary" to regulate coal- and oil-fired power plants under CAA Section 112, and it added them to the Section 112 list of source categories.

In 2005, EPA changed course. EPA withdrew the 2000 "appropriate and necessary" finding and finalized a rule to remove coal- and oil-fired power plants from the Section 112 list. Rather than establishing maximum achievable control technology (MACT) standards to control mercury emissions under Section 112, EPA promulgated a cap-and-trade program to limit power plant mercury emissions under Section 111. These 2005 actions, however, were vacated by the U.S. Court of Appeals for the DC Circuit in 2008 before EPA could implement the cap-and-trade program. The DC Circuit ruled that EPA unlawfully delisted coal- and oil-fired power plants from the Section 112 list because EPA failed to comply with the statutory delisting criteria.

In 2012, EPA reaffirmed the 2000 "appropriate and necessary" finding and promulgated MATS. The MATS Rule, which remains in effect today, established MACT standards to reduce mercury and acid gases from most existing coal- and oil-fired power plants.

EPA's accompanying analysis, published in late 2011, estimated that the annual benefits would be between $37 billion and $90 billion in 2016. Nearly all of the monetized benefits were from the rule's particulate matter co-benefits. EPA monetized one of the expected mercury impacts—IQ loss to children exposed to mercury from recreationally caught freshwater fish—but could not monetize other mercury impacts. Such non-monetized impacts may include, according to EPA, other neurologic effects (e.g., memory and behavior), cardiovascular effects, and effects on wildlife. Factors that precluded comprehensively monetizing mercury and other HAP benefits from the MATS rule included gaps in toxicological data, uncertainties in estimating human effects based on animal experiments, and insufficient economic research to translate the health and environmental effects to dollar value terms.

Regulatory impact analyses dating back to 2000 have acknowledged the difficulty in monetizing HAP reduction benefits, emphasizing that the lack of monetized estimates does not mean the benefits lack value. Previous administrations have concluded that such benefits justify emission standards, albeit under different authorities of the CAA. For example, during the George W. Bush

Administration, the EPA's 2004 analysis of a proposed action to reduce power plant mercury emissions concluded that the non-monetized benefits were "large enough to justify substantial investment in emission reductions" (EPA, "Benefit Analysis for the Section 112 Utility Rule," p. 49).

Numerous parties petitioned the courts to review MATS. Among other things, some petitioners disagreed with EPA's conclusion that it was not appropriate to consider costs when making an "appropriate and necessary" finding under CAA Section 112. In 2015, the Supreme Court agreed with the petitioners and remanded the rule for further consideration (*Michigan v. EPA*, 135 S. Ct. 2699 (2015)).

In 2016, EPA finalized a supplemental "appropriate and necessary" finding based on its review of the 2012 rule's estimated costs. EPA used two approaches. The agency's first and preferred approach evaluated whether compliance costs were reasonable based on the industry's historical annual revenues and capital expenditures, retail electricity rates, and potential impacts on reliability. The second approach involved a direct comparison of the estimated compliance costs and the estimated benefits, which included co-benefits. The 2016 Supplemental Finding concluded that under both approaches, it is appropriate and necessary to regulate HAPs, including mercury, from power plants after considering regulatory costs.

2018 Reconsideration

In late 2018, EPA proposed to reverse the 2016 Supplemental Finding based on its new conclusion that the monetized compliance costs greatly outweigh the monetized benefits of HAPs reductions.

The Trump Administration determined that EPA's benefit-cost comparison for the 2016 Supplemental Finding was flawed because it included co-benefits from non-HAP pollutants. While EPA acknowledged that estimation of all benefits and costs, including ancillary impacts, is consistent with federal guidance and standard economic practice, the agency concluded that it erred when it gave benefits (HAP reductions) and co-benefits (non-HAP reductions) equal consideration when making its 2016 "appropriate and necessary" finding under Section 112(n). The 2018 A&N proposal describes CAA Section 112(n)(1)(A) as "focused on hazards resulting from HAP-specific emissions" and concludes "it is *not* proper to place much weight" on non-HAP co-benefits (p. 27).

This interpretation marks a change from the Obama Administration, which concluded that nothing in the CAA prohibits EPA from considering co-benefits in a benefit-cost analysis for an "appropriate and necessary" finding. The 2016 Supplemental Finding characterized the non-HAP reductions as a "direct result of achieving the HAP emission limits under MATS" and included these monetized co-benefits in the total benefits estimate. EPA's 2016 Supplemental Finding also pointed to the legislative history, noting that Senate Report 101-228 "recognized that MACT standards would have a collateral benefit of controlling criteria pollutants as well and viewed this as an important benefit of the air toxics program" (81 *Federal Register* 24439, April 25, 2016).

EPA's 2018 proposal revised the 2016 benefit-cost comparison by excluding the monetized co-benefits. This resulted in the estimated compliance costs—$9.6 billion in 2015—outweighing the monetized HAP benefit estimates—$0.5 million to $6 million, depending on the discount rate, in 2016. (As in previous analyses, compliance cost projections for 2016 were not available due to model configuration.) EPA concluded that HAPs regulation is not appropriate and necessary under Section 112(n) because monetized costs exceed monetized HAP benefits.

EPA also asserted that the non-monetized HAP benefits are less than the monetized compliance costs but did not explain the basis for this conclusion. EPA stated, without further elaboration, that identifying the unquantified HAP benefits "is not sufficient, in light of the gross imbalance of monetized costs and HAP benefits, to support a finding that it is appropriate and necessary to regulate" power plants under CAA Section 112 (2018 proposal, p. 27).

Available rulemaking documents do not explain why EPA disagrees with its previous conclusions about non-monetized HAP benefits. EPA's 2011 MATS analysis stated that non-monetized benefits "could be substantial, including the overall value associated with HAP reductions, value of increased agricultural crop and commercial forest yields, visibility improvements, and reductions in nitrogen and acid deposition and the resulting changes in ecosystem functions" (EPA, Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards, 2011, p. 28).

Potential Issues for Congress

In addition to uncertainty about whether EPA will take additional action on the MATS emission standards, the 2018 proposal raises questions about how EPA should factor benefits and costs into regulatory decisions. As discussed above, it raises questions about EPA's consideration of non-monetized HAP benefits and whether excluding co-benefits is consistent with the CAA. Such questions are relevant in light of the Administration's reconsideration of existing CAA regulations.

Federal guidance directs agencies to assess whether the benefits of a proposal justify the costs but does not require monetized benefits to outweigh monetized costs. The guidance recognizes that quantified benefit and cost estimates may not capture all anticipated benefits and costs and directs analysts to identify non-quantified impacts "of sufficient importance to justify consideration in the regulatory decision" (OMB Circular A-4, p. 10).

Determining whether non-monetized health and environmental benefits and co-benefits (monetized or not) justify monetized compliance costs is inherently difficult and may continue to spark debate. In 2015, the Supreme Court rejected arguments that costs are irrelevant to an "appropriate and necessary" finding under CAA Section 112(n), but it did not address whether EPA has authority to consider monetized co-benefits in evaluating the cost of MATS (*Michigan v. EPA*, 135 S. Ct. 2699, 2711 (2015)).

Kate C. Shouse, Analyst in Environmental Policy

Disclaimer