Environmental Protection Network

(202) 656-6229
environmentalprotectionnetwork.org
info@environmentalprotectionnetwork.org

EPN Comments on EPA's Proposed Revocation of the 2020 Reconsideration and Affirmation of the Appropriate and Necessary Supplemental Finding Notice of Proposed Rulemaking

Docket No.: EPA-HQ-OAR-2018-0794

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Founded in 2017, the Environmental Protection Network (EPN) harnesses the expertise of more than 550 former Environmental Protection Agency (EPA) career staff and confirmation-level appointees from Democratic and Republican administrations to provide the unique perspective of former regulators with decades of historical knowledge and subject matter expertise.

EPN is pleased to comment on EPA's proposal to revoke its May 2020 finding that it is not "appropriate and necessary" to regulate coal- and oil-fired electric utility steam generating units under Clean Air Act section 112, and to reaffirm its April 2016 finding that it remains appropriate and necessary to regulate these sources after costs (and benefits) are considered.

EPN applauds EPA's restoration of the finding that it is "appropriate and necessary" to regulate hazardous air pollutant (HAP) emissions from coal- and oil-fired electric power plants. EPA correctly notes that the volume of pollution that is reduced by regulating these sources, the harm to public health that would occur if these sources were unregulated, and the availability of controls to reduce these emissions at costs that allow the industry to continue to provide reliable and affordable electricity all support such a finding.

However, EPN urges EPA to take steps to further strengthen this proposal, using all the information available in the current record and in comments filed on this proposal, to update the cost benefit analysis (CBA) that EPA published in 2011 when MATS was promulgated. As the proposal notes, that analysis contained weaknesses that make it potentially misleading – in particular, making costs appear higher and benefits less than current information suggests. Without that information, the public and reviewing courts may be misled about the actual costs and benefits of implementing the decision. The public will also not be clear as to why MATS is so important. Such errors in the factual record are always problematic, but particularly in this case, wherein the Supreme Court has taken pains to underscore the need to weigh implementation costs in judging the proposed action.

Therefore, EPN strongly urges EPA to update the 2011 regulatory impact analysis (RIA) using current data on costs and benefits. This can be done without delaying final action, based on the information available in the rulemaking record, or that will be contained in these and other comments on this proposal. It does not require performing a new CBA (which is not required to satisfy the holding in *Michigan v. EPA),* but simply adding the information that is in the rulemaking record.

Updating the CBA will buttress the conclusion that regulation of HAPs from coal- and oil-fired electric utility steam generating units is, in fact, appropriate and necessary. While CBA still has some limitations in this context, as we discuss below, and even an updated CBA should not be the sole basis for a decision, the record will be incomplete and misleading without an updated CBA.

Improving the Cost Analysis

First, we strongly recommend that EPA include a more accurate accounting of the costs of MATS in its final finding.

Such an accounting will show that the actual costs of the MATS rule are much lower than originally anticipated. EPA's 2011 CBA estimated that it would cost $9.6 billion for the regulated coal- and oil-fired electric utility steam generating units to come into compliance in 2015. That estimate was based on the best then-available estimates consistent with what were estimated to be the most feasible means of complying with the standards. Several studies have since documented the actual cost and concluded that it was not nearly so high.[1] In part, this was because industry innovated, as it so often does when faced with costs of complying with impending regulations to protect public health and safety, providing the needed protection at lower costs and improving economic and regulatory efficiency and public health protection.

In the current proposal, EPA discusses these studies and uses them to conclude that EPA had erred in its cost estimate in the CBA. However, EPA's totality-of-the-circumstances approach stops short of providing a new EPA estimate of costs. Implicit in the Supreme Court's emphasis on considering costs is a requirement that it incorporate the best available information characterizing costs.

In fact, less expensive controls were able to meet the standards. For example, sorbent injection was used to meet the acid gas standard, and improvements in activated carbon made its use for mercury control more efficient and thus less expensive. In addition, natural gas prices did not rise as EPA had assumed they would in 2011, and as a result, some coal-fired power plants switched to less costly natural gas generation, which is not covered by MATS and, thus, requires no mercury or other HAP emission control. EPA should therefore update the RIA to state its best current estimate of costs.

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[1] See: Declaration of James E. Stuart, Ph.D., CFA, at 3, White Stallion Energy Center v. EPA, No. 12-1100 (D.C. Cir. Dec 24, 2015

Letter from the Edison Electric Institute, The American Power Association, The National Rural Electric Cooperative Association, The Clean Energy Group, The Class of '85 Regulatory Response Group, The International Brotherhood of Electrical Workers, The International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers & Helpers to William Wehrum, Assistant Administrator, Office of Air and Radiation, U.S. Environmental Protection Agency (July 10, 2018). available at: https://legacy-assets.eenews.net/open_files/assets/2018/07/11/document_gw_04.pdf

James E. Staudt, Andover Technology Associates, Update of the Cost of Compliance with MATS—Ongoing Costs of Control, White Paper, (May 25, 2017) available at: https://www.sierraclub.org/sites/www.sierraclub.org/files/blog/ADA%20Carbon%20Solutions%20Letter.pdf

M.J. Bradley & Associates, Issue Brief, November 16, 2017. Available at https://www.mjbradley.com/sites/default/files/MJBA_IssueBrief_MATS_2017-11-16.pdf

Another problem with the discussion of costs in the 2011 CBA is that it only considers costs in 2015, the year that facilities were required to come into compliance and the year that costs were the highest. The decision before EPA today is not the same as the decision in front of it in 2011 when MATS was promulgated. The capital costs of installing controls in the past are sunk costs, and most plants are amortizing those costs and recovering them during the useful lives of the facilities. The costs relevant today are those that regulated entities would incur by continuing to comply with the rule from now on and are mostly the costs of operating pollution control devices that have already been installed. These are a fraction of the costs of installation that the industry faced in 2011. This point is not addressed at all in the current proposal and should be.

Improving the Benefits Analysis

Second, an updated CBA could also provide more accurate information on the benefits of the MATS rule.

We note that EPA has corrected a grave error in the 2020 finding. In 2020 EPA had refused to account for the co-benefits of HAP control. EPN commented on the 2020 proposal concerning the problems with this approach. Accounting for all the benefits (and disbenefits) of a regulation is sound economic practice.[2] We are encouraged to see that here in the 2022 proposal, EPA has acted responsibly and considered the co-control benefits of HAP control in making this finding.

EPN also appreciates that EPA's proposal augments EPA's 2011 RIA's quantification of MATS-related HAP benefits by providing three new mercury analyses, which estimated risks associated with fish consumption for one cardiovascular endpoint and augmented earlier IQ loss estimates. In this proposal, EPA tried to consider the general U.S. population and freshwater subsistence anglers, rather than only freshwater recreational anglers, a narrow segment of the population that is exposed to mercury via fish consumption, as was done in the RIA. While we applaud these augmentations to the benefits analysis, recognizing that this is the first time a cardiovascular endpoint associated with electric power plant-sourced mercury exposures (or indeed for any mercury-related exposures) has been evaluated in an EPA regulatory analysis, we are concerned that the scope of overall RIA quantitative air toxics benefits analysis remains very limited, e.g., it does not address all mercury health endpoints, does not even address all mercury cardiovascular endpoints, does not address other HAP health benefits, and does not address HAP wildlife benefits or other benefits previously identified by EPN and others. Moreover, it does not fully reflect the state-of-the science.

We think that it is essential that EPA expand the scope of benefits addressed and incorporate available scientific information and methods more fully so as to provide an enhanced description of quantitative benefits. EPN believes an improved benefits analysis is essential not only for purposes of the rulemaking but also to provide critical information to the public.

As to the type of analysis that should be conducted, we would refer you to a white paper published by the Harvard T.H. Chan School of Public Health, written by experts at the Chan School, the

[2]Environmental Protection Network, Comments for the record, (84 Fed. Reg. 2670 (Feb. 7, 2019)) https://www.environmentalprotectionnetwork.org/wp-content/uploads/2019/04/FINAL-EPN-Comments-on-MATS-4_17_19-2.pdf

Harvard John A. Paulson School of Engineering and Applied Science, the Harvard Law School, Syracuse University, and the Biodiversity Research Institute. It discusses some key weaknesses in EPA's 2011 CBA and lays out steps that EPA should undertake to provide the public with a science-based estimate of the benefits of MATS.[3]

We summarize some of the most salient points of that white paper here and submit the entire report for the record. We strongly urge EPA to consider its advice. We also support the comments being filed on this proposal by the Harvard Environmental Law Clinic, which builds on the white paper.

1. The EPA's 2022 notice considers the mercury emissions that were projected in the 2011 RIA, rather than the lower actual emissions achieved by the regulation and reported to EPA.

2. The white paper recommends that EPA use an updated atmospheric model that more accurately reflects current understanding of mercury transport and deposition. Improvements in the understanding of mercury chemistry have been incorporated in more updated models—including an update to EPA's own model. We urge that it or one of the more recent transport models be used in an updated analysis. This is significant as the older version of the model underestimates the proportion of mercury emissions that is deposited in the U.S. and, thus, leads to an understatement of the benefits of reducing those emissions.

3. The white paper recommends the use of air transport/deposition mercury modeling as an element of a methodology for developing estimates of exposure from eating U.S. *coastal marine fish*. As emphasized in the white paper, "a substantial fraction of commercial market fish consumed in the U.S. is from domestic harvests of estuarine fish on North Atlantic and North Pacific coasts." To date, no EPA analyses, including the RIA, have attempted to use air modeling to help estimate exposure associated with mercury emissions deposited in these or in any marine environments, since the scientific uncertainties have been considered too large for credible results. Now, however, the white paper asserts new science indicates that this is not the case:

   > "In the MATS RIA, a proportional change in freshwater fish mercury concentrations with shifts in atmospheric mercury deposited to freshwater ecosystems was assumed. *We propose the same approach could be used for both coastal and freshwater fish for the revised analysis*. This approach is reasonable because scientific research now shows that most methylmercury accumulated in coastal fish is derived from the water column rather than a sediment source, and, therefore, will respond more rapidly to shifts in atmospheric inputs than previously expected (Chen et al., 2014; Sunderland et al., 2010; Schartup et al., 2015)." (White Paper, p. 20)

   We urge EPA to give careful consideration to the white paper's arguments and data in developing a state-of-the-science analysis. We understand that quantifying the benefits

[3] https://www.hsph.harvard.edu/c-change/news/mercury-science-and-the-benefits-of-mercury-regulation/

associated with eating coastal fish using this approach represents a major step forward and would significantly reduce the large uncertainty associated with the exposure component of mercury analyses linking emissions to exposure, thereby improving the benefits analysis. For example, its results would supplement the "bounding analysis" approach used in EPA's most recent mercury analyses to provide a quantitative accounting of general population exposures. While these analyses appear useful, they avoid use of air modeling and are assumption-driven (we note the assumptions and their implications are not always fully described in EPA's Notice or Technical Support Documents) and, thus, they yield results with huge uncertainty. Thus, EPA states: "[The] bounding analysis is intended to generate a range of risk estimates … to provide an order-of-magnitude screening estimate for the potential range of MI-mortality." (Technical Support Document for Risk, p. 2, emphasis added)

4. As part of its methodology for a new analysis, the white paper recommends using National Health and Nutrition Examination Survey data on U.S. mercury exposure, EPA's existing one-compartment pharmacokinetic model, and recently published information on methylmercury in ingested seafood from coastal and freshwater systems. We strongly urge you to consider the recommendations of the Chan School white paper in analyzing the benefits of MATS.

5. EPA's reference dose for methylmercury is outdated. It is based on a number of endpoints that measure adverse neurological outcomes in several human populations exposed *in utero* through maternal consumption of methylmercury-containing seafood. Subsequent analyses converted certain of these scores into the loss of IQ points, and these estimates have been used in RIA. Since the reference dose (RfD) was published, numerous studies have found that exposures below EPA's RfD are associated with adverse effects. In fact, EPA is currently revisiting its RfD. EPA's CBA should consider effects below EPA's RfD.[4]

6. Loss of IQ points is not the most sensitive neurologic endpoint on which to base an RIA. Other adverse effects include negative effects on memory, learning, and behavior. The effect of adult exposures is also of concern including accelerated age-related decline. EPA's analysis should expand the suite of neurotoxic endpoints that it considers.

7. EPA's discussion and analysis of the cardiovascular effects of methylmercury does not fully reflect current science. In 2011 a panel of experts convened by EPA to examine the then-current science around cardiovascular effects of methylmercury concluded that methylmercury is linked to acute myocardial infarction (MI) and intermediary effects that can lead to MI. The panel recommended that these effects should be included in a RIA

[4] See for example: Karagas MR, Choi AL, Oken E, Horvat M, Schoeny R, Kamai E, Cowell W, Grandjean P, Korrick S Evidence on the human health effects of low-level methylmercury exposure. Environmental Health Perspectives, Vol120, No 6, June 2012, https://pubmed.ncbi.nlm.nih.gov/22275730/

and that EPA should develop a dose response for this endpoint.[5] While this publication is cited in the 2022 notice, the advice was not taken. Instead, EPA looked at a threshold response for acute MI and assumed that no one was above the threshold. This results in a substantial undercounting of exposures. In addition, EPN recommends that EPA address other cardiovascular endpoints in addition to acute MI. This is needed to ensure that mercury benefits are not undercounted.

8. EPA should examine the disproportionate impact of mercury pollution on low-income communities and communities that are highly exposed to mercury. Low-income persons often supplement their diets with self-caught fish. Certain communities, including some immigrant or indigenous populations, are especially highly exposed to mercury. EPA should examine recent data on high-end fish consumers in an updated CBA.

9. Cumulative exposure is ignored in EPA's 2011 regulatory analysis. EPA's analysis assumes that mercury emitted from coal-fired power plants is the sole source of mercury exposure in the U.S. population. There are other sources of exposure. The mercury exposure of any given individual is therefore likely to be higher than that accounted for by EPA. Because mercury is especially dangerous to highly-exposed individuals, EPA may be undercounting the number of individuals who are highly exposed and the adverse health effects that result. EPA should correct this. EPN agrees that the benefits of reducing electric generating units (EGU)-related emissions should take into account instances where EGU-related contributions to total individual mercury exposures do not, *in themselves,* cause exceedance of benchmarks, but would, when added to an individual's exposure, tip exposures beyond risk thresholds.

Relation to the "Totality" Approach and Limits of CBA

EPA's proposal is based on what it calls a "totality-of-the-circumstances" approach. EPN's comments are not inconsistent with that approach, but are intended to complement it. Indeed, the results of the CBA are one of the circumstances that should be considered along with others.

The "totality" approach allows EPA to address limitations in CBA, and to consider factors that are challenging for CBA, such as the distributional effects of mercury pollution from power plants and their disproportionate impacts on low-income, overburdened communities.

The "totality" approach can also be useful where, as here, there is difficulty in monetizing some of the benefits of reducing emissions of mercury and other HAPs. Even an updated CBA would leave some benefits unquantified or not monetized, and these should not simply be ignored. For example, it may be difficult to quantify some of the benefits of reducing the effect mercury exposure has on some adverse neurotoxic effects; likewise, some of the benefits of reducing non-mercury HAP

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[5] Roman HA, Walsh TL, Coull BA, Dewailly É, Guallar E, Hattis D, Mariën K, Schwartz J, Stern AH, Virtanen JK, Rice G. Evaluation of the cardiovascular effects of methylmercury exposures: current evidence supports development of a dose-response function for regulatory benefits analysis. Environmental Health Perspectives 2011 May;119(5):607-14. doi: 10.1289/ehp.1003012. Epub 2011 Jan 10. Review.

emissions may not be quantifiable. In these cases, combining an updated CBA with an approach similar to the totality of circumstances would be appropriate.

Comments Regarding a Technology Review

In this notice, EPA solicited information on the cost and performance of control technologies used to comply with MATS. Toward that end, we wish to alert you to a recent study by Andover Technologies entitled Analysis of PM and Hg Emissions and Controls from Coal-Fired Power Plants.[6]

The authors note that MATS motivated a nationwide effort to control mercury emitted by power plants. As a result, MATS also encouraged extensive research and development by industry to find ways to economically control emissions to the required levels. Technological advances included advanced techniques to enhance mercury capture by scrubbers and means to enhance mercury capture by particulate matter (PM) control equipment. Furthermore, there were extensive improvements in activated carbon injection (ACI), the technology that was most commonly used to increase mercury capture in the PM control devices. The report concludes that higher removal rates are achievable for many units, and at a modest incremental cost.

MATS allows plants to control PM as a way to reduce emissions of non-mercury metals. Here again, the industry has found low-cost ways to achieve lower PM emissions that were not anticipated in 2011 or considered when EPA promulgated MATS. Using an analysis of compliance data from the National Resource Defense Council, the report concludes that a number of plants are currently controlling PM to well below the MATS PM emission standard, and only a small number of units reported emissions close to the level of the emission standard. Therefore, a reduction in the emission standard would be possible without a large impact on the coal fleet.

We urge EPA to consider this study in its technology review.

Conclusion

EPA is correct: it is appropriate and necessary to regulate HAP emissions from coal- and oil-fired power plants. We applaud this notice. However, by underestimating and dismissing mercury benefits, EPA has repeatedly provided fodder to those who wish to jettison the regulation and discredit EPA. We recognize that EPA has limited resources and a lot on its plate. However, a more accurate and expanded analysis of benefits that reflects the state of the science would help to protect EPA from repeated attacks on the standards. It would also allow the public to understand why it is so important that you do what you are rightly doing—controlling mercury and other HAP emissions from one of the highest emitting sectors in the U.S.

Thank you for this opportunity to share our thoughts with you.

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[6]Andover Technology Partners, Analysis of PM and Hg Emissions and Controls from Coal-Fired Power Plants, August, 2021, https://www.andovertechnology.com/wp-content/uploads/2021/08/PM-and-Hg-Controls_CAELP_20210819.pdf