



April 17, 2019

Environmental Protection Agency
1200 Pennsylvania Avenue, NW,
Washington, DC 20460.

RE: EPA Docket No. EPA-HQ-OAR-2018-0794 Mercury Air Toxic Standards Proposed Revised Supplemental Finding and RTR

The American Chemical Society (ACS), the world's largest scientific society, is concerned about the potential impact of the proposed Revised Supplemental Finding and Risk Technology Review (RTR) on public health. The proposed finding does not account for all benefits and costs of MATS implementation and could set a worrying precedent for future rule makings.

ACS believes that "policymakers should consider scientific analyses and relevant technical information in a comprehensive, transparent, and unbiased manner."¹ The revised finding proposes to disregard the co-benefits of reducing pollutants beyond mercury, specifically particulate matter pollution (PM_{2.5}). Given the strong connection between particulate matter pollution and poor health, a comprehensive analysis of the benefits and costs of MATS must include consideration of the benefits of reducing PM_{2.5} emissions.²

The ACS believes that 'the full environmental, economic, and security costs' associated with using fossil fuel resources, such as coal, must be accounted for in market pricing and national energy decision making.³ In 2011, EPA estimated that co-benefits from MATS would amount to \$37-90 billion in 2016 alone, primarily via improved health outcomes from reduced particulate matter exposure. In addition, EPA reported there were additional substantial benefits that were unquantified, including increased agricultural crop and commercial forest yields, visibility improvements, and reductions in nitrogen and acid deposition. Failing to account for the co-benefits of MATS sends the wrong message to the market and undermines rigorous energy policymaking. Instead, U.S. government policies should encourage the market to incorporate the full lifecycle cost of energy sources either through pollution control regulation or pricing strategies.

The ACS asks the EPA to ensure that any changes to MATS fully and transparently contemplates all of the available science on the benefits of pollution reduction. As the EPA considers changes to pollution standards that impact energy generation in the United States, the full range of benefits and costs should be considered in order to avoid perverse incentives in the energy marketplace.

Respectfully submitted,

Caroline Trupp Gil

¹ See attachment ACS Position Statement "Scientific Integrity in Public Policy"

² See "Selected ACS Publications"

³ See attachment ACS Position Statement "Energy Policy"

SCIENTIFIC INTEGRITY IN PUBLIC POLICY

Our nation faces a wide range of complex challenges requiring the timely and efficient formulation of public policy. Accurate and up-to-date scientific and technical information is critically important for developing many public policies. Policy decisions should be informed by people with a variety of skills and perspectives, including the relevant technical expertise.

The American Chemical Society (ACS) strongly supports the use of insightful, comprehensive scientific and engineering input to the development and evaluation of policy options. ACS also encourages the use of scientific integrity policies that help federal, state, and local governments obtain and integrate scientific assessments into policy development and implementation.

Scientific integrity—including the independence of the scientific process and the rigorous application of science-based knowledge—should be upheld throughout all levels of government. Scientists and engineers should provide comprehensive, transparent, unbiased, and understandable technical analyses. Policymakers should consider scientific analyses and relevant technical information in a comprehensive, transparent, and unbiased manner.

As noted in a recent report of the National Academies of Sciences, Engineering, and Medicine,

"The relationship between the research enterprise and the larger society, including policy makers and the public, has become deeper and more complex. Research is implicated in more policy areas with higher stakes, so as science is called upon to inform decision making there is more risk of research being invoked in controversies, misrepresented, or shaped to advance a desired political outcome, contributing to poor decision making and loss of public trust."

To clarify and strengthen the role of science and the integrity of its use in development of public policy, ACS recommends the following:

Federal, State, and Local Governments

- Government agencies should regularly review and improve their procedures for obtaining and utilizing unbiased scientific and technical input for policy development.
- Government agencies should utilize scientific and technical advisory committees to guide programs. Advisory committees should contain a diversity of technical expertise and opinions, selected from recognized, credible experts in the field from all sectors. Committees should have sufficient diversity to reduce or eliminate conflict of interest concerns for any single member. Employer, professional or political affiliations, and prior policy positions should not preclude anyone from serving on advisory committees. Program leaders are ultimately responsible for weighing the advice of the committee, making decisions, and documenting rationales for decisions made.
- Agencies should clearly and transparently identify what scientific information would be needed to inform their key regulatory issues, and develop frameworks to collect,

The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Committees on Environmental Improvement, Science, and Corporation Associates. ACS is a non-profit scientific and educational organization, chartered by Congress, with more than 158,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

American Chemical Society, 1155 Sixteenth Street NW, Washington DC 20036, 202-872-4386, www.acs.org/policy

evaluate, and use that information in a consistent and timely manner, while protecting intellectual property rights, confidential company information and the privacy of personal information.

- Agencies that conduct or fund scientific research should establish and maintain scientific integrity policies that can ensure the objectivity, clarity, and reproducibility of the scientific information, and that provide protection against bias, fabrication, falsification, plagiarism, interference, and censorship.
- Legislative bodies should make use of transparent science, technology and policy analyses performed by qualified professionals in creating effective legislation.
- Legislative committees should seek direct testimony from diverse technical experts on scientific and policy issues,

Scientific Processes and Procedures

- Scientific discourse should be encouraged; such discourse is purposely designed to question what is known and consider various scientific perspectives and interpretations.
- Government agencies should maintain clear conflict of interest policies. Potential conflicts of interest and bias among researchers and other experts involved in policy development and assessment should be handled transparently and fairly.
- Legislative hearings about the science used to inform the crafting of laws and regulatory decisions should be encouraged, because this open dialog will provide the best basis to identify the nature and certainty of knowledge about technical issues.
- Scientists and their institutions should not be burdened unreasonably by extensive or repetitive requests for information and explanation.

Data Quality, Use, Review and Preservation

- Government policy analysts should ensure that scientific input incorporates and references all relevant, peer-reviewed sources.
- Quantitative scientific input with careful uncertainty and sensitivity analyses should be the norm. Conflicting results should be documented and, to the extent possible, quantitatively assessed, evaluated, and reconciled by experts.
- Cross-agency communication is encouraged and should be as transparent as possible.
- Government agencies should have a policy for archiving, protecting, and providing access to scientific data and scientific databases. Science sits on a foundation of observations, tests and analyses that are reproducible, repeated, and verifiable. Conclusions are strengthened by additional observations consistent with the hypothesis, and invalidated by contradictory observations. Preservation of data is critically important for strengthening conclusions, as is transparency about how data are both obtained and used.

Scientific Access and Advice

- Government employed or funded scientists and engineers should be empowered to pursue professional development, present their unclassified research at appropriate technical symposia, and publish in peer-reviewed journals without interference.
- Government scientists should be allowed to discuss their published, peer-reviewed research with the media and the public. When they comment publicly on policy options

informed by their research and general technical knowledge, they should clearly state that they are offering their own opinions and not speaking for the government agency.

- When government agencies must prevent their employees, grantees, and/or advisors from commenting publicly on scientific results or policies, restrictions should be transparent and consistently enforced. Appeal processes should be easily available and timely.

Selected ACS Publications

- 1. Air Quality-Related Health Benefits of Energy Efficiency in the United States**
David W. Abel, Tracey Holloway, Javier Martínez-Santos, Monica Harkey, Madankui Tao, Cassandra Kubes, and Sara Hayes
Environmental Science & Technology **2019** *53* (7), 3987-3998
DOI: 10.1021/acs.est.8b06417
- 2. Ambient PM_{2.5} Reduces Global and Regional Life Expectancy**
Joshua S. Apte, Michael Brauer, Aaron J. Cohen, Majid Ezzati, and C. Arden Pope, III
Environmental Science & Technology Letters **2018** *5* (9), 546-551
DOI: 10.1021/acs.estlett.8b00360
- 3. Public Health Costs of Primary PM_{2.5} and Inorganic PM_{2.5} Precursor Emissions in the United States**
Jinhyok Heo, Peter J. Adams, and H. Oliver Gao
Environmental Science & Technology **2016** *50* (11), 6061-6070
DOI: 10.1021/acs.est.5b06125
- 4. Addressing Global Mortality from Ambient PM_{2.5}**
Joshua S. Apte, Julian D. Marshall, Aaron J. Cohen, and Michael Brauer
Environmental Science & Technology **2015** *49* (13), 8057-8066
DOI: 10.1021/acs.est.5b01236

ENERGY POLICY

Energy production and use have significant implications for our environment, economy, and national security and is a critical and complex policy issue. Federal, state, and local governmental actions help shape U.S. energy production, distribution, and consumption. The ACS acknowledges that currently no single energy technology is simultaneously reliable, affordable, clean, and secure for all people in the United States. Energy policy must balance short-term goals, such as low costs to encourage economic growth, against long-term goals, such as environmental protection, security, and resilience. It is important to develop new and existing energy technologies to support a diversified energy portfolio. Technology innovations drawn from chemical enterprises have elevated U.S. energy independence following the rapid expansion of natural gas and renewable energy sources. The current abundance and stability in the energy landscape presents an opportunity for the U.S. government and industry to develop, promote and adopt clean energy innovations that are not solely based on fossil fuels.

The ACS believes the following core objectives should drive energy policy and use in the United States:

- 1) Provide a stable and sustainable supply of energy from multiple sources.
- 2) Continue development and use of renewable and carbon-free technologies.
- 3) Modernize energy generation, distribution, storage, efficiency and security infrastructure.
- 4) Support responsible land use and environment protection.

Fossil Fuel Based Energy Resources

Coal, oil and natural gas continue to be an important energy source in the United States, but the full environmental, economic, and security costs associated with using these resources must be factored in to their market prices and national energy decision-making. The negative environmental impacts of burning fossil fuels need to be addressed by implementing better management practices such as further reducing carbon emissions. In addition, methane leaks during gas production, transport, storage and distribution need to be reduced in order to realize the greenhouse gas emission benefits of energy from natural gas in comparison to burning coal. As “clean coal” technology development and demonstration has underperformed in the domestic energy market despite sustained support, ACS urges that continued research in this field promote the transfer of clean coal technologies to developing nations where clean coal may be a more viable option to a lower carbon economy.

The ACS advocates for:

- More aggressive carbon mitigation and sequestration strategies that will reduce harmful environmental effects of fossil fuel combustion.
- The transition from the excessive use of fossil fuels for combustion to their conserved use as feedstock for new materials such as carbon fiber, graphene, and graphite foams for energy capture and storage.

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Renewable and Carbon-Free Energy Resources

Renewable energy resources are naturally replenishing, but flow-limited in the amount of energy that is available per unit of time. Renewable sources include biomass, hydro, geothermal, solar, wind, ocean thermal, wave action, and tidal action. Nuclear energy, while not considered a renewable source, provides a more carbon-free source of electricity with high energy density, utilization and reliability. The continued development of next generation reactors is expected to protect the climate, boost the economy, and ensure our global leadership and competitiveness. The ACS recognizes valid public concerns about the safety and potential environmental impact of nuclear energy, while at the same time acknowledging that safe implementation and use can be achieved as has been demonstrated by U.S. military nuclear programs.

The ACS recommends the U.S. government:

- Prioritize long-term, coordinated support for technologies and processes that (1) are transformative and (2) manage resources through their life cycle as defined by the ACS Sustainability statement.
- Make robust investments in the procurement of energy from renewable energy resources and expand efforts to use renewable energy and materials in chemical manufacturing.
- Enact consistent, long-term policies to increase the competitiveness of renewable and sustainable technologies and to reduce greenhouse gas emissions.
- Encourage development of next generation, advanced nuclear reactor designs and preemptively adapt its regulatory stance to be consistent with emerging concepts including small modular and breeder reactors and nuclear waste management.

Electric Grid and Other Energy Infrastructure

Today's complex and changing energy system comprises a range of organizations and infrastructure for extracting, processing, storing and transporting fuel; as well as systems, including distributed resources and the electric grid, for generation, transmission, and distribution of electricity. This energy system is subject to changes in technology, markets, and policies in multiple jurisdictions, which can affect consumers' energy access and costs. It is in the national interest to improve and support the resilience, reliability, flexibility, sustainability, and security of these systems.

The ACS encourages programs that:

- Improve the coordination between government and the private sector to facilitate updating, maintaining, and protecting the nation's energy infrastructure, especially with respect to physical and cyber threats.
- Address concerns about critical material supply and supports research into sustainable alternatives.

Conservation & Efficiency

Improving energy efficiency and conservation is the easiest, least expensive, and most practical ways to make positive impacts on fuel consumption and energy use, particularly in the short term. Developing energy technologies to foster safe, secure, efficient, and innovative use of resources should align with a sustainable food-energy-water system.

The ACS recommends:

- To continue government leadership in energy efficiency, implementing and periodically strengthening mandatory fuel-efficiency standards for light-duty, heavy-duty and fleet vehicles and supporting more energy efficient building codes and standards.

- Adopt measures such as efficiency labeling, and tax incentives to encourage the sale of more efficient vehicles and buildings. Incentives and regulations must be predictable and ongoing to encourage efficiency and conservation at the residential and commercial level.
- Voluntary standards and assessment systems be continued and expanded.

Electrification

The move to truly renewable electricity supply holds great promise to reduce the fossil energy supplied to buildings and transportation, the two largest current users. Renewable electricity used in heating and transportation will reduce fossil fuel use and cut greenhouse gas emissions.

The ACS supports:

- Incentives that promote electric vehicles and the infrastructure to support their use.
- Continued development of better renewable electricity production technology, low resistance super conducting materials, improved batteries, heat pumps and other technologies using carbon-free electricity.
- Programs that support better grid integration and the transition to renewable resources.