ORAL ARGUMENT NOT YET SCHEDULED
No. 16-1127 (and consolidated cases)

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

MURRAY ENERGY CORPORATION, *et al.*,
Petitioners,
v.
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,
Respondents.

On Petitions for Review of Final Agency Action of the United States Environmental Protection Agency 81 Fed. Reg. 24,420 (Apr. 25, 2016)

BRIEF OF *AMICUS CURIAE* CATO INSTITUTE IN SUPPORT OF PETITIONERS

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

(A) Parties and *Amicus*

Except for *amicus curiae* Cato Institute, all parties, intervenors, and *amici* appearing in this Court are listed in the Opening Brief of State and Industry Petitioners.

(B) Rulings Under Review

References to the rulings at issue appear in the Opening Brief of State and Industry Petitioners.

(C) Related Cases

Amicus adopts the statement of related cases set forth in the Opening Brief of State and Industry Petitioners.

Dated: November 25, 2016

/s/ Mark W. DeLaquil
Mark W. DeLaquil

CORPORATE DISCLOSURE STATEMENT

Pursuant to Fed. R. App. P. 26.1 and Circuit Rule 26.1, *amicus curiae* makes the following disclosures:

The Cato Institute, a nonpartisan public-policy research foundation dedicated to advancing the principles of individual liberty, free markets, and limited government, certifies that it has not issued shares to the public; that it has no parent company, subsidiary, or affiliate that has issued shares to the public; and that no publicly held company has 10 percent or greater ownership interest in it.

Dated: November 25, 2016

/s/ Mark W. DeLaquil
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SEPARATE *AMICUS CURIAE* BRIEF

Pursuant to D.C. Circuit Rule 29(d), counsel for *amicus curiae* Cato Institute certifies that a separate brief is necessary for its presentation to this Court both due to the its unique position as a nonpartisan public-policy research foundation dedicated to advancing the principles of individual liberty, free markets, and limited government, and due to the position regarding EPA's findings that Cato advocated before the Supreme Court and now advocates before this Court. None of the other *amici* of which we are aware intends to interpret and address the impact of the Supplemental Finding in the same way as Cato.

Accordingly, *amicus curiae*, through counsel, certifies that filing a joint brief would not be practicable.

Dated: November 25, 2016

/s/ Mark W. DeLaquil
Mark W. DeLaquil

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GLOSSARY OF TERMS

CAA or Act	Clean Air Act
EGU	Electric Generating Unit
EPA or agency	United States Environmental Protection Agency
HAP	Hazardous Air Pollutant
MATS or MATS Rule	Mercury and Air Toxics Standards, 77 Fed. Reg. 9,304 (Feb. 16, 2012)
NAAQS	National Ambient Air Quality Standards
Revised Mercury TSD	Revised Technical Support Document: National-Scale Assessment of Mercury Risk to Populations with High Consumption of Self-caught Freshwater Fish, EPA-452/R-11-009 (Dec. 2011)
RIA	Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards (Dec. 2011)
Rule	Supplemental Finding That It Is Appropriate and Necessary To Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units; Final Rule, 81 Fed. Reg. 24,420 (Apr. 25, 2016)

INTEREST OF THE *AMICUS CURIAE*[1]

The Cato Institute is a nonpartisan public-policy research foundation dedicated to advancing the principles of individual liberty, free markets, and limited government. Cato's Center for Constitutional Studies was established in 1989 to help restore the principles of limited constitutional government that are the foundation of liberty. Toward those ends, Cato publishes books and studies, conducts conferences, files briefs in the courts, and produces the *Cato Supreme Court Review*.

Cato's Center for Study of Science ensures that environmental regulations are supported by sound scientific research. Its director, Patrick H. Michaels, Ph.D., was a professor of environmental sciences at the University of Virginia for 30 years, president of the American Association of State Climatologists, and program chair of the American Meteorological Society's Committee on Applied Climatology.

This case implicates Cato's longstanding belief that the courts must exercise appropriate oversight of administrative agencies to ensure that they remain within their statutory limits.

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[1] Pursuant to Fed. R. App. P. 29(c), counsel for *amicus* certifies that no counsel for any party authored this brief in whole or in part and that no person or entity other than *amicus* or its counsel made a monetary contribution intended to fund the brief's preparation or submission.

STATUTES AND REGULATIONS

All applicable statutes and regulations are contained in the Appendix to the Opening Brief for State and Industry Petitioners.

SUMMARY OF ARGUMENT

It seems EPA will not take "no" for an answer. In *Michigan v. EPA*, 135 S. Ct. 2699 (2015), the Supreme Court found the agency's decision to regulate power plants under the Clean Air Act's hazardous air pollutant program ("HAP") to be unlawful. The Court chastised EPA for failing to weigh the relative costs and benefits of its program, observing that "[o]ne would not say that it is even rational, never mind 'appropriate,' to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits." *Id.* at 2707.

In response, EPA ostensibly considered the "appropriateness" of its action in light of the benefits. 81 Fed. Reg. 24,420 (Apr. 25, 2016) ("Rule"). But the Rule evinces the same blindness that landed the agency in the Supreme Court in the first place. Rather than make an honest comparison of the costs and benefits *of the MATS Rule's regulation of hazardous air pollutant emissions*, EPA focused on whether regulated entities could afford the burdens of regulation. And

to justify its regulatory approach, it relied extensively on purported benefits that are irrelevant and specious.

The so-called "co-benefits" of fine particulate matter reductions are irrelevant to whether it is appropriate and necessary to regulate hazardous air pollutants under Clean Air Act § 112. Congress prohibited EPA from directly regulating NAAQS pollutants like fine particulate matter under Section 112. Moreover, regulating those pollutants in this manner clashes with Congress's judgments about (1) which entities should have primary regulatory authority over the substances (the States, not EPA) and (2) how stringently emissions of those pollutants must be regulated (to the "requisite" level, not through technology-based "maximum" achievable control technology standards).

The putative benefits are also specious. Rather than attempt to realistically assess the benefits of regulating hazardous air pollutants, EPA employs a methodology that places a thumb on the scale at every step of its benefit calculations and that regularly eschews real data in place of unrealistic assumptions and wild speculations. Particularly for a $10 billion per year rule, that simply is not good enough.

In short, the Rule remedies none of the defects identified by the Supreme Court in *Michigan v. EPA*. The petitions for review should therefore be granted.

ARGUMENT

I. Co-Benefits Are Irrelevant to the Section 112 "Appropriate and Necessary" Finding

EPA trumpets the MATS Rule's "co-benefits," which it "estimate[s] to be $33 to $90 billion per year." 81 Fed. Reg. at 24,400/1. But those "co-benefits" are best understood not as benefits, but regulatory externalities—reductions in non-HAPs, such as fine particulate matter, that Congress has barred EPA from regulating under Section 112. *See id.* Indeed, Congress instructed EPA to regulate fine particulate matter under separate Clean Air Act provisions, Sections 108, 109, and 110, which impose different obligations and different limitations on the agency's regulatory authority. By collapsing these separate provisions and regulating fine particulate matter under Section 112, EPA destroys the deliberate balances struck in the Clean Air Act, and arrogates to itself a power that Congress never granted.

The Clean Air Act distinguishes between HAPs and fine particulate matter, prescribing different standards and regulatory

regimes for each. HAPs are pollutants like mercury that may pose a serious risk to human health or the environment in sufficient quantities. As such, the Clean Air Act orders EPA to promulgate standards that "require the *maximum degree* of reduction in emissions . . . taking into consideration of the cost of achieving such emission reduction . . . [that] is achievable for new or existing sources . . . ." CAA § 112(d)(2), 42 U.S.C. 7412(d)(2) (emphasis added).

By contrast, particulate matter, though a pollutant of nationwide concern, is required to be regulated in a way that is nearly always less stringent than the "maximum degree." Particulate matter, like other NAAQS pollutants, has a presence "in the ambient air [that] results from numerous or diverse mobile or stationary sources." CAA § 108(a)(1)(B), 42 U.S.C. § 7408(a)(1)(B). In order to avoid the Clean Air Act driving the United States industry to extinction through regulation of these ubiquitous substances, the Act deprives EPA of the authority to establish a primary NAAQS at a zero-risk level, because the terms of Section 109 "do not describe a world that is free of all risk—an impossible and undesirable objective." *Whitman v. Am. Trucking Ass'ns, Inc.*, 531 U.S. 457, 493 (2001) (Breyer, J., concurring). Instead, EPA

must establish NAAQS "*requisite* to protect public health." CAA § 109(b)(1), 42 U.S.C. § 7409(b)(1) (emphasis added). And "requisite," the Supreme Court has held, means "sufficient, but not more than necessary." *Whitman*, 531 U.S. at 473 (opinion of the Court) (quotation marks omitted).

Not only does the NAAQS program manifest Congress's intention that EPA not force reductions of these pollutants below the level that is requisite to protect public health with a margin of safety, Congress manifested its specific intention that EPA not use the Section 112 program to regulate emissions of NAAQS pollutants except in very limited circumstances that are inapplicable here: "No air pollutant which is listed under section 7408(a) of this title may be added to the list under this section." CAA § 112(b)(2), 42 U.S.C. § 7412(b)(2). The Act thus draws a clear regulatory distinction between HAPs and NAAQS pollutants like fine particulate matter, expressly barring EPA from regulating the latter as if it were the former.

By crediting particulate matter-related co-benefits in the face of criticism that it was counting benefits from "reducing criteria pollutants below the level established in the NAAQS program," EPA flouted

Congress's unambiguous decision to separate these programs and the kinds of pollutants to which they are applicable. *See* 81 Fed. Reg. at 24,440/1. In this way, the MATS Rule directly impairs one of the primary goals of the Clean Air Act: to "promote . . . the productive capacity of its population." CAA § 101(b)(1), 42 U.S.C. § 7401(b)(1). A creature of statute, EPA cannot override Congress's policy judgment.

What is more, EPA's decision to make an end-run around the NAAQS program violates the program's fundamental premise: that States have the primary authority to determine how best to control the emissions of the ubiquitous NAAQS pollutants. Air-pollution control at its source is the primary responsibility of State governments. *See* CAA § 101, 42 U.S.C. § 7401. Under Section 110, 42 U.S.C. § 7410, States prepare "implementation plans" that lay out measures to ensure that the air-quality regions within their jurisdiction attain the standards. *See, e.g.*, *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2435 (2014).

Due to this division of authority, federal power to second-guess a State's choices of how to control their emissions is tightly limited. EPA *must* approve an implementation plan that will attain the national standards in the requisite time frame, regardless of whether the agency

might prefer more stringent action or a different set of emission limitations than those prescribed by the State. *See Union Elec. Co. v. EPA*, 427 U.S. 246 (1976). *Only* if a State fails to submit an acceptable plan may EPA impose its own federal implementation plan. *See* CAA § 110(c), 42 U.S.C. § 7410(c). And while EPA is not permitted to require the States to reduce ambient criteria pollutant levels below the NAAQS, Congress specifically saved the States' existing authority to do so. CAA § 116, 42 U.S.C. § 7416.

By contrast, EPA is the primary regulator in the Section 112 program, which leaves a State *no discretion* to determine whether it would prefer that emissions control come in the form of limitations on power plants or other measures, such as automobile inspection and maintenance programs, or controls on dust resulting from agricultural, construction, and demolition activities. By relying on such emissions to justify Section 112 regulation, EPA arrogates to itself authority that Congress specifically accorded the States and denied EPA.

Where EPA relies on factors that Congress did not intend for it to consider in making discretionary determinations, or fails to consider those that it was obligated to weigh, it acts unlawfully. *Massachusetts v.*

EPA, 549 U.S. 497, 528 (2007) (setting aside agency action as "arbitrary, capricious, or otherwise not in accordance with law" when the agency answered a "statutory question . . . based on impermissible considerations"). Because the Clean Air Act does not authorize EPA to weigh the "co-benefits" of particulate matter emission reduction to justify regulation under Section 112, EPA's reliance on those "co-benefits" renders its action unlawful.

II. EPA's Analysis of the Putative Benefits of Regulating HAPs Is Specious

EPA's analysis of the putative benefits of regulating hazardous air pollutants from coal- and oil-fired power plants under Section 112 faces an additional problem: it is specious. The direct benefits that EPA determined would result from reducing hazardous air pollutants under Section 112 fall into two different categories: (1) "quantified" benefits from alleged income gains in a small category of persons, and (2) other purported health benefits that EPA did not even attempt to quantify due to their speculative and uncertain nature. Neither approaches the $9.6 billion in real costs that EPA finds the Rule will (at a minimum) impose. As a result, EPA fails to heed the Supreme Court's admonition that "[o]ne would not say that it is even rational, never mind

'appropriate,' to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits." *Michigan*, 135 S. Ct. at 2707. Indeed, the agency puts so heavy a thumb on the scale in assessing even these meager benefits that it casts doubt on the agency's objectivity in undertaking the cost-benefit analysis the Court required.

A. Mercury deposition

EPA has such difficulty quantifying the benefits of the MATS Rule because mercury pollution is a worldwide phenomenon and its action will have virtually no effect on global mercury emissions.

Mercury pollution is a global phenomenon. Mercury "cycles in the environment as a result of [both] natural and human (anthropogenic) activities." 76 Fed. Reg. 24,976, 24,983/1 (proposed May 3, 2011). This is especially true of power plants' elemental mercury emissions, which "do[] not quickly deposit or chemically react in the atmosphere." RIA at 4-3. Instead, they "circulate[] in the atmosphere for up to a year, and, hence, can be widely dispersed and transported thousands of miles from likely sources of emission." 76 Fed. Reg. at 24,983/1. Indeed, EPA acknowledges that Asia, being "immediately upwind of North America . . . [,] affects U.S. [mercury] deposition significantly and also

affects it the most compared to other regions." 77 Fed. Reg. 9,304, 9,338/2 (Feb. 16, 2012).

From this global perspective, the mercury reductions that EPA attributes to the Rule are *de minimis*. EPA projects that the MATS Rule will reduce U.S. power-plant mercury emissions from the base case of 26.6 tons per year to 6.6 tons per year, a reduction of 23 tons. RIA at 3-10, Table 3-4. This 23-ton reduction represents the elimination of approximately 0.3 percent of total annual global mercury emissions. *See* 76 Fed. Reg. at 25,001/3–02/1 (estimating total global mercury emissions of 7,300 to 8,300 tons per year). Because U.S. deposition due to domestic emissions is roughly proportional to U.S. sources' share of global emissions, this reduction in emissions could be expected to reduce domestic mercury deposition by substantially less than a single percentage point. Accordingly, the MATS Rule does almost nothing to reduce human exposure to mercury.

B. Hypothetical populations

For that reason, a straightforward estimate of the health impact of regulation would have found no material risk to be remedied. So, to

justify regulation, EPA put a thumb—more like a thumb from everyone in the Agency—on the scale.

In particular, lacking any evidence that the Rule might benefit an actual human being, EPA modeled the mercury exposure of hypothetical populations of women that the agency projects to consume extreme quantities of the most contaminated fish from the most contaminated bodies of water. It then estimated the potential effect of this exposure on their hypothetical children's neurological development *in utero*. The agency is quite clear that this approach "is not a representative population-weighted assessment of risk." Revised Mercury Risk TSD at 2. Instead, per the agency, "the primary objective is to determine whether individuals exposed to [mercury] emitted from U.S. [power plants] through high-end consumption of freshwater self-caught fish have the potential to experience significant risk." *Id.* at 6. In other words, the agency's threshold for regulation was not even plausibility, but *conceivability* of risk.

And it labored mightily to meet even that mark. The agency focused its attention on "women of child-bearing age in subsistence fishing populations who consume freshwater fish that they or their

family caught." 76 Fed. Reg. at 25,007/2. But EPA did not bother to observe or verify the size, fish-consumption rates, mercury-exposure levels, health effects, or even the *very existence* of these populations.[2] *Even for a rule costing $9.6 billion per year*. Instead, EPA assumed the existence, characteristics, and fishing activity of these populations, and then, relying on another string of often-questionable assumptions, modeled the health risks they could face from consuming fish containing methylmercury in 2016. *See generally* Revised Mercury Risk TSD at 14, Fig. 1-2 (Flow Diagram of Risk Analysis).

Here's how it works: EPA first conceived "seven female subsistence fish consumer scenarios." *Id.* at 15. These "scenarios" were

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[2] *See, e.g.*, Revised Mercury Risk TSD at viii ("Because we do not have data available on the distribution of subsistence fishing populations in all watersheds in the U.S., we modeled a hypothetical female subsistence consumer at those watersheds where we have fish tissue data and where we believe subsistence fishing activity has the potential to occur."); *id.* at 9 ("Because it is not possible to enumerate these high-end fisher populations, the risk estimates that are generated are not population-weighted and instead are given a uniform weight for each watershed-level risk estimate generated."); *id.* at 34 n.32 ("While we cannot enumerate the subsistence fishers directly, we can use the demographic data to determine if the underlying source population is present in the vicinity of a watershed with fish tissue [mercury] data."); *id.* at 34 n.33 ("[W]e believe it *reasonable to assume* that the typical female subsistence fish consumer scenario (and associated fishing activity) *could potentially occur* at some subset of the watersheds with fish tissue [mercury] data.") (emphases added).

based on data from a few surveys of fish-consumption patterns among specific demographic groups, in particular locales, that are known for catching and consuming fish. *See id.* at 15, 32 & Table 1-5. It also included a general "typical female subsistence fish consumer scenario," as well as six scenarios tailored to specific racial and economic subgroups, based on three localized surveys. *Id.* at 32, 35. Notably, EPA did not identify actual, existing communities that it believed were likely to include subsistence fish consumers based on actual evidence that the community included such persons, but instead operated by what would certainly be called "stereotyping" in other contexts. For example, the agency would assume that, if a Census tract in a watershed area contained at least 25 Asian-Americans, that population was a "high-end fisher population" catching and consuming unusually large quantities of wild fish. *Id.* at 9.

Having identified hypothetical "female subsistence fish consumer" scenarios for each watershed, the agency next "defined high-end (subsistence) self-caught fish consumption rates for those scenarios." *Id.* at 35. These "high-end rates" were defined by figures drawn from the 90th or (where available) 99th percentile of consumption rate as

reflected in the surveys. *Id.* at x, 16. For the "typical" scenario those figures range from 99 to 300 pounds of fish per year. *See id.* at 81, Table 2-6. So for each hypothetical "typical" or "high-end fisher population," EPA assumed the existence of women who consume the maximum conceivable amount of self-caught fish.

In sum, rather than consider health impacts on any actual person or population, EPA contrived hypothetical women of child-bearing age consuming exceptionally large quantities of self-caught fish from watersheds around the nation.

C. Exposure modeling

EPA's next step was to show that at least some of these hypothetical fisherwomen actually faced a health risk. That analysis proceeded in two stages: exposure modeling (how much mercury are these hypothetical persons consuming?) and risk modeling (could that amount possibly affect human health?).

To conduct the exposure modeling, EPA first needed to estimate the amount of mercury in fish from different watersheds. In so doing, EPA did not attempt to determine which watersheds were "representative" of mercury pollution. Instead, the agency placed a

thumb on the scale in favor of finding risk by deriving a methodology that it acknowledged was "likely to be biased towards locations with higher [mercury] fish tissue concentrations." *Id.* at 19. After filtering out certain tissue samples and watersheds for various reasons, the agency was left with 35,567 tissue samples from 3,141 watersheds, out of about 88,000 watersheds total. *Id.* at 24. For many of these watersheds, the agency had only a *single* fish-tissue sample. *See id.* at 28, Fig. 1-7. Where there were multiple samples from a watershed, EPA used the 75th-percentile fish-tissue value—that is, containing significantly above-average amounts of mercury—"as the main basis for exposure and risk characterization." *Id.* at 26.

Assuming a linear relationship between mercury deposition and fish-tissue mercury concentration at a given watershed, the agency projected what those concentrations would be in 2016. *Id.* at 43–44. At this point, the agency had projections of how much methylmercury would be found in fish tissue at the watersheds.

To complete the exposure phase of the analysis, EPA needed to estimate the methylmercury exposure for the "female subsistence consumer[s] . . . active at each watershed." *See id.* at 14, Fig. 1-2. This

was relatively straightforward: it had already estimated consumption rates of its hypothetical 99th-percentile fish consumers in its hypothetical "high-end fisher populations," as described above. But rather than simply multiply—amount of fish times the projected amount of mercury in a unit of fish—the agency also boosted its mercury estimates by a factor of 1.5, which it called a "cooking adjustment factor." *Id.* at 41. EPA recognized that this factor could be as low as 1—that is, no effect at all—but of course chose once again to put a thumb on the scale by applying the higher number. *See id.* at 41, 100, Table 2-15, row (H); 77 Fed. Reg. at 9,347/2–3. After making a few additional adjustments, the agency arrived at "estimates of annual-average daily [methylmercury] exposure per kg body weight." Revised Mercury Risk TSD at 42.

D. Risk modeling

Having estimated its hypothetical high-end fish consumers' exposure to methylmercury, EPA's next task was to determine whether that exposure was associated with any potential health risk.

The first step was to identify the "reference dose" for methylmercury. This is "the amount of a chemical which, when ingested

daily over a lifetime, is anticipated to be without adverse health effects to humans, including sensitive subpopulations." 77 Fed. Reg. at 9,307/3. After throwing out a study that failed to show serious health effects at all,[3] the agency calculated a reference dose of 0.1 microgram per kilogram of body weight per day. *See* Revised Mercury Risk TSD at 52, Fig. 1-9; 65 Fed. Reg. 79,825, 79,827 (Dec. 20, 2000).

The second step was to calculate a "hazard quotient" for each of its hypothetical high-end female fish consumers of childbearing age at watersheds around the country. 76 Fed. Reg. at 25,006 n.92. This is simply exposure divided by the reference dose, such that a value above one (i.e., exposure is greater than the reference dose) indicates a "potential public health hazard." Revised Mercury Risk TSD at 43. Based on this methodology, EPA determined that "almost all" of the watersheds that it considered were "at risk" because at least one

[3] The reference dose is derived from "the three extant large studies of childhood effects of in utero exposure," from the "Faroe Islands, New Zealand, and an integrative measure including data from Seychelles." 77 Fed. Reg. at 9,351/1. The Seychelles study, however, "did not confirm any harm on children due to [methylmercury] exposure." *Id.* at 9,350/2. But EPA discounted that study because it failed to show "an association between [methylmercury] exposure and adverse effects." *Id.* at 9,351/2. In other words, the agency discarded the study's conclusions because it did not find the relationship needed to justify its regulatory approach.

hypothetical high-end fish consumer at each would consume enough self-caught fish containing the highest estimates of mercury to surpass the reference dose and therefore face a hazard quotient of greater than one. 76 Fed. Reg. at 25,015/3.

E. Attribution to U.S. power plants

Next, EPA estimated the proportion of these hazard quotients attributable to projected U.S. power-plant mercury emissions in 2016. *See* Revised Mercury Risk TSD at 43–44. In so doing, EPA faced a tall task because, as discussed above at Section II.A, mercury emissions have little localized impact. Instead, as with greenhouse gases, mercury pollution is a global phenomenon.

In fact, anthropogenic mercury emissions from all U.S. sources (including power plants) comprise only a tiny fraction of the global pool of atmospheric mercury that is deposited in the United States. EPA estimates that U.S. anthropogenic mercury emissions "contribute[] 5 percent to global anthropogenic [mercury] and 2 percent [of] the total global [mercury] pool." 76 Fed. Reg. at 24,978/3. That amounts to 105 tons in 2005, out of global anthropogenic emissions of 2,100 tons. *Id.* at 24,978 n.2. And the U.S. share is rapidly declining, going "from 10

percent in 1990 to 5 percent in 2005, due to reductions in U.S. emissions and increases in emissions from other countries." *Id.* at 25,002/1.

The portion of global anthropogenic mercury emissions attributable specifically to U.S. power plants is considerably smaller. EPA estimates that U.S. power plants emitted 53 tons of mercury in 2005—about half of total domestic emissions—and projected that they would emit just 29 tons in 2016, without regulation under Section 112. *Id.* at 25,002/2–3 & Table 3. But the portion of *total* global emissions (both natural and anthropogenic) attributable to U.S. power plants is even smaller still. This is because a substantial portion of global emissions are attributable to natural sources, such as volcanoes. *Id.* at 25,003/1; RIA at 4-22. EPA cites "estimates of total global [mercury] emissions . . . rang[ing] from 7,300 to 8,300" tons per year. 76 Fed. Reg. at 25,001–02. Therefore, domestic power plants were responsible for 0.6 to 0.7 percent of total emissions in 2005, with that range falling to 0.3 to 0.4 percent in 2016.

So EPA put yet another thumb on the scale in favor of finding risk. EPA could have estimated the percentage of watersheds "at risk"

because of U.S. power plants' mercury emissions—that is, watersheds where emissions from U.S. power plants can be identified as the marginal factor causing them to be at risk. Instead, to augment the attribution figures, EPA included "at risk" watersheds where deposition attributable to U.S. power-plant emissions equaled or exceeded 5 percent of the estimated total, regardless of whether that deposition was sufficient to *cause* the "at risk" designation. 76 Fed. Reg. at 25,015–16. *See also* 77 Fed. Reg. at 9,366/1.

Using this methodology, and assuming "99th percentile fish consumption," EPA arrived at a figure of 29 percent. Revised Mercury Risk TSD at 86 & Table 2-10. And that figure, whatever it represents, was the basis for EPA's finding that "U.S. [power plants] are causing a hazard to public health." 76 Fed. Reg. at 25,016/1. *See also* 77 Fed. Reg. at 9,311 n.15. And that, in turn, rendered it "appropriate" to regulate those plants' emissions. *Id.* at 9,311/2–3.

F. Converting mercury exposure into IQ benefits

Finally, EPA identified the most significant health effect that might result from these small, calculated exposures as potential IQ loss in children due to *in utero* exposure. RIA at 4-39. EPA then quantified

the IQ losses that it purported would result to these exposed populations. Based on the assumptions discussed above, EPA projected that some 240,000 children would be affected by mercury emissions, and that each would suffer a mercury-induced loss of 0.10 IQ points, on average. RIA at 4-55, 4-67. Collectively, this would amount to a loss of 24,419 IQ points out of an American population of approximately 320,000,000, due to exposure to fish-borne mercury from all sources. *Id.* at 4-54.

But almost none of that loss could be attributed to U.S. power plants, because they are responsible for so small a proportion of global mercury emissions. So EPA calculated the proportional number of IQ points that would be "saved" per year through regulation: 510.8, across the entire population of children of hypothetical self-caught fish consumers. *See id.* at ES-5, Table ES-3. In other words, EPA abused the concept of significant digits by estimating that each affected child would enjoy an average "avoided IQ loss" of 0.00209 IQ points. *Id.* at 4-3. To put this infinitesimal risk in context, the mean IQ test has a measurement error of 5 points, *Hall v. Florida*, 134 S. Ct. 1986, 1994–95 (2014) (citation omitted). Putting one more thumb on the scale of

finding risk, EPA failed to identify a reliable scientific basis for the incredible proposition that decrements of two-thousandths of a single IQ point cause any difference in cognitive function or that such marginal reductions in methylmercury exposure have any meaningful effect on cognitive function whatsoever.

EPA then put another thumb on the scale by assuming, without evidence, that avoiding an IQ loss of 0.00209 points could have *any* impact on *any* individual's future earnings. This allowed EPA to proceed to translate the increase in IQ into economic terms, and project a total annual benefit due to "avoided IQ loss" of $500,000 to $6 million (in 2007 dollars), depending on the discount rate applied. *See* RIA at ES-6, Table ES-4. To reach that figure, EPA adopted the estimate, based on lead-exposure studies and Department of Education data of the annual income gain attributed to each additional year in school, that the loss of an IQ point reduces an individual's annual income by $892 to $1,958. *Id.* at 4-47 to 4-48, 4-90. As EPA acknowledges, this assumes that emissions reductions will immediately translate into reductions in methylmercury levels—an assumption EPA never even attempts to prove. RIA at 4-3 n.1.

In sum, the Rule's meager "$4 to $6 million in monetized mercury benefits," 81 Fed. Reg. at 24,441/2, is itself an inflated figure, which the EPA produced by making numerous groundless assumptions and putting thumbs on the scale at every possible opportunity.

III. The Unquantified Benefits of HAP Reductions Are Even More Speculative and Specious

EPA's assessment of the unquantified benefits of reducing HAPs from power plants is even more specious than its attempt to quantify the purported benefits of mercury reductions.

EPA's unquantified benefits analysis amounts to a leap of faith: hazardous air pollutants are hazardous, so there must be *some* benefit to reducing power plants' emissions of them, even if EPA does not know and cannot estimate what that benefit is. But the Clean Air Act does not provide the EPA plenary authority to reduce air emissions as the agency sees fit. *See Michigan v. EPA*, 268 F.3d 1075, 1084 (D.C. Cir. 2001) (stating that the Clean Air Act does not provide EPA with "a roving commission to achieve pure air or any other laudable goal").

Instead, the Clean Air Act requires that EPA demonstrate that reducing these power plant HAP emissions would actually benefit people or the environment by connecting hazardous air pollutant

emissions from power plants to the effects of those emissions. EPA regularly conducts this type of analysis, including for putative co-benefits of fine particulate matter reductions, by using air quality dispersion models to estimate the incidence of different types of emissions from power plants on people, and then considering the effect that those emissions would be estimated to have.

For the majority of HAPs emitted by power plants, EPA was unable to conduct this analysis because the exposures in question were so low that the agency could not meaningfully estimate benefits. This is particularly the case with regard to acid gases, which amount to almost a quarter of the MATS Rule's nearly $10 billion annual compliance costs but for which EPA has not attempted to quantify, let alone monetize, benefits to anyone or anything from the controls required by the MATS Rule. 76 Fed. Reg. at 25,075, Table 24. (The same could also be said of mercury, in light of EPA's heroic effort to arrive at a quantified benefit that is practically meaningless.) EPA blames its failure on "gaps in toxicological data, uncertainties in extrapolating results from high-dose animal experiments to estimate human effects at lower doses, limited monitoring data, difficulties in tracking diseases

such as cancer that have long latency periods, and insufficient economic research to support the valuation of the health impacts often associated with exposure to individual HAP." 81 Fed. Reg. at 24,441/3. But that is just a technical way of saying that the agency lacks data and reasoning to support its decision to regulate.

Even where EPA was able to tie the effects of HAP emissions to some health impacts, the rationale for regulation was far out of line from the types of effects that have justified EPA regulation in the past. In particular, EPA states that the Rule is appropriate because "HAP emissions from U.S. EGUs would still reasonably be anticipated to pose hazards to public health." 81 Fed. Reg. at 24,423. A "revised inhalation risk assessment for non-mercury HAP of 16 facilities estimated a lifetime cancer risk for an oil-fired EGU facility of 20-in-1 million, five coal-fired EGU facilities with cancer risks greater than 1-in-1 million, and one coal-fired facility with cancer risks of 5-in-1 million." *Id.*

But where disfavored sources (like power plants that burn coal) are not involved, EPA routinely finds that far higher risk estimates provide an adequate margin of safety and do not justify further regulation under Section 112. For example, EPA found that risks from

the Secondary Aluminum Production source category provided an adequate margin of safety despite an estimated facility-wide maximum individual risk of 70-in-1 million—more than three times the maximum individual risk of the Rule. 80 Fed. Reg. 56,700, 56,711, 56,715 (Sept. 18, 2015). Similarly, EPA refused to revise the Aerospace National Emissions Standards for Hazardous Air Pollutants to require additional controls pursuant to CAA Section 112(f)(2) based on residual risk review, even though EPA found a "maximum facility-wide cancer [maximum individual risk] [of] 20-in-1 million" and 44 facilities with a "facility-wide cancer [maximum individual risk] greater than or equal to 1-in-1 million." 80 Fed. Reg. 76,152, 76159–60 (Dec. 7, 2015). And in its Primary Lead Processing rule, the agency found that "public health is protected with an ample margin of safety" after estimating a maximum individual risk of cancer at 20-in-1 million. 76 Fed. Reg. 70,834, 70,839–40 (Nov. 15, 2011).

Finally, even if the unquantified benefits EPA identifies were sufficiently reliable to be considered at all, EPA fails entirely to explain why these benefits are sufficient, alone or in combination with the $6

million maximum in quantified benefits, to require $9.6 billion in annual compliance costs. This flaw alone is fatal.

CONCLUSION

By all indications, EPA refused to undertake any meaningful cost-benefit analysis to ascertain whether regulation is "appropriate and necessary," because any meaningful analysis of the type required by *Michigan* would have not allowed EPA to justify the regulatory approach on which it had already settled. Although agencies are due some measure of deference for their factual and scientific analyses, even deference is not enough, in this instance, to overcome the facts and the law. EPA's analysis falls far short in demonstrating that Section 112 regulation is warranted, as the Supreme Court's decision in this case requires. On that basis, the petitions for review should be granted.

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Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitations of Fed. R. App. P. 32(a)(7) because it contains 5,606 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii). This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in 14-point Century Schoolbook typeface.

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CERTIFICATE OF SERVICE

I hereby certify that on November 25, 2016, a copy of the foregoing Brief of *amicus curiae* Cato Institute in Support of Petitioners was served electronically through the Court's CM/ECF system on all ECF-registered counsel.

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