

ENVIRONMENTAL POLICY

Congress should

- repeal national air and water quality laws and regulations that involve localized pollution; and
- set a price on emissions or limits on the quantity of emissions and funnel the proceeds from the sales to those who are exposed to pollutants.

Current federal air pollution regulations are heavily influenced by concerns about particulate matter (PM). According to the U.S. Environmental Protection Agency (EPA), “particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.” These emissions are linked to a number of different negative health effects. Reducing exposure to fine particulate matter often accounts for 90 percent of the estimated benefits of air regulations, according to the EPA.

How much should we reduce PM? Because pollution decisions necessarily involve one choice for many people, conflict arises when answering that question. Normal public-sector budgetary struggles result from participants having different preferences and willingness to pay for desired outcomes, with policy-makers ultimately making choices that more or less correspond to the preferences of the median voter. But environmental policy conflict manifests itself as struggles over science. You can’t just want cleaner (or dirtier) air because of your willingness (or lack thereof) to pay for it. Instead, your preferences must be supported by scientific estimates.

Science plays a disproportionate role in environmental quality policy disputes because the federal Clean Air Act demands it. Every five years, the EPA must prepare a document that “accurately reflects the latest scientific knowledge” on the health effects of exposure. It must then set a standard that is “requisite to protect the public health, . . . allowing an adequate margin of safety” to ensure “an absence of adverse effect on the health of a statistically related

sample of persons in sensitive groups.” In 2001, the Supreme Court ruled in *Whitman v. American Trucking Association* that the Clean Air Act “unambiguously bars cost considerations from the [pollution limits]-setting process.” Thus, EPA decisions on conventional pollutants are all about the benefits of emission reduction as ascertained by science because that is exactly what the law instructs the EPA to do.

Science also plays a disproportionate role in environmental policy because of political benefits. Delegating decisions to the EPA and “science” allows members of Congress to avoid making explicit decisions about environmental benefits and their costs.

Estimates of the effects of reduction in exposure to PM come from two studies: the American Cancer Society (ACS) study and the Harvard Six Cities Study (SCS). The ACS study follows 500,000 adults and the SCS follows 8,000 adults over time, estimating their relative risk of dying prematurely given their differing levels of exposure to PM.

The two studies have been the subject of much criticism. The Health Effects Institute—an air pollution research institute funded by both the EPA and the auto industry—reanalyzed the ACS study in 2000 and found anomalies. Increased PM exposure was associated with increased mortality for men but not women, those with high school or less education but not college graduates, and those who were moderately active but not sedentary or very active. Such variation is difficult to explain biologically.

When migration rates were included as a control variable in the statistical analyses, the PM effect disappeared. Cities that lost population in the 1980s were Rust Belt cities that had higher PM levels. People who migrated from those cities were healthier and younger. The PM effect was more likely nonrandom migration from older cities rather than an actual pollution-exposure effect.

Over time, PM levels have decreased and medical advances have increased. Thus, the reduction in mortality associated with fine-particle exposure could also be the result of better medical care rather than fine-particle reduction.

Pollution epidemiology research usually involves associations of *levels* of exposure with mortality rates. The association between higher PM concentrations and mortality rates is a cross-sectional relationship across cities with different levels of PM and different mortality rates. And yet the policy question is whether *changes* in exposure produce *changes* in health outcomes. It is certainly true that mortality rates among the elderly are higher in locations with higher PM levels. But *increases* in PM concentrations from one year to the next are *negatively* associated with changes in mortality.

As part of its policymaking, the EPA also uses a consulting firm to survey 12 experts (including three of the authors of the ACS study and the SCS) to ascertain their confidence in whether the statistical relationship between PM

exposure and premature mortality found in the studies was causal. Four of the 12 experts said there was a probability of 10–65 percent that no causal relationship existed between PM concentration and mortality. Three experts said there was a 5 percent probability of noncausality, whereas another five experts said there was a probability of between 0 and 2 percent. Only one of those five said there was a 0 percent probability of noncausality. Under the standard requirement of keeping the probability of false positive effects to less than 5 percent, the majority of the surveyed experts did not reject a null hypothesis of noncausality. A 95 percent confidence interval would include a zero mortality effect for any reductions below 16 micrograms per cubic meter. Yet despite this “science,” in December 2012, the EPA set a fine-PM standard of 12 micrograms per cubic meter of air, to be met by 2020. The Trump administration reaffirmed the 12-microgram standard in December 2020.

During the Trump administration, the fight over PM exposure had two manifestations: data transparency and cobenefits. Data transparency would have required the EPA to use scientific research when setting pollution exposure standards only if the original data were publicly available, allowing other researchers to examine and replicate findings. Although data access and reproducibility of results are the very essence of the scientific method, the transparency rule was also a clever attempt to undermine the current basis for EPA regulation of PM by excluding the SCS and ACS studies. In early 2021, a federal judge vacated the rule on procedural grounds.

The term “cobenefits” refers to the practice of counting benefits from PM and nitrogen oxide emission reduction that result indirectly from reducing toxic emissions—in this case mercury—from coal combustion. The Obama administration estimated that installation of mercury control technology would cost \$9.6 billion a year while resulting in only \$6 million in annual health benefits. But if reductions of PM and nitrogen oxide emissions were considered, an additional \$80 billion in health benefits would occur as a side effect of controlling mercury emissions. The Trump EPA issued a rule requiring separate accounting of direct benefits and cobenefits in regulatory cost–benefit analyses. The Biden administration repealed the Trump rule in May 2021 and proposed to reinstate the lack of distinction between direct and cobenefits in February 2022.

In the absence of any revisions in environmental statutes, such environmental regulatory Ping-Pong will take place with any change in party at the presidential level.

Scientific Disputes Signal Trading Possibilities

Critics of environmental regulation typically argue that “sound science” supports less stringent requirements. According to that view, if more people

understood the tenuous nature of the evidence linking reduction in current pollution exposure to improved morbidity and mortality, political support for the current environmental policy regime would diminish.

But work by Yale law professor and cultural theorist Dan Kahan suggests that people's views about environmental policy relate to their cultural group identity, not scientific literacy. Those who are *more* scientific and numerate disagree *more* about environmental policy than those who are less informed. When acceptance of scientific evidence conflicts with group values, science loses and group values win.

So when you hear someone invoke the term “sound science,” don't think of it as a call for another review of the literature by the National Academy of Sciences. Instead, think about “sound science” as a signal about a struggle over the initial allocation of property rights—that is, the right to differing levels of environmental quality—and the possibility that people can realize large benefits from being able to trade those rights, even if they have strong preferences for different pollution levels.

In this view, the Clean Air Act gives implicit property rights to people who want very low pollution levels. Notice the language quoted earlier that the EPA must set standards that ensure “an absence of adverse effect on the health of a statistically related sample of persons in sensitive groups.” Entities that would prefer a lower level of environmental quality would be willing to pay a large amount to have relaxed requirements. “Persons in sensitive groups”—that is, people especially concerned about pollution (e.g., asthmatics)—might well accept such a payment in lieu of the EPA-required emissions reduction.

From this perspective, the most important irrationality of environmental regulation is not its allocation of rights to a pristine environment backed by questionable scientific evidence, but its not allowing those initial decisions to be altered by subsequent trading. In this view, the role of government is to facilitate the development of secondary markets for public goods that would enable flows of money in the form of emissions fees or rights transfers that go directly from emitters to citizens in return for consent to change ambient air quality.

What level of government should facilitate such bargains? Before the nationalization of environmental policy in 1970, environmental quality was a local issue. Some areas were dirty and others were not. But under the imposition of federal pollution requirements in 1970, the cheapest way for local areas to comply was to mandate dramatically taller smokestacks, which in essence transferred local pollution to downwind areas. As long as smokestack heights are low and transport is minimal, environmental quality is a local issue. Thus, the relevant unit of government to facilitate these bargains is probably at the metropolitan level.

Suggested Readings

- Cox, Louis Anthony. "Improving Causal Inferences in Risk Analysis." George Washington University Regulatory Studies Center working paper, August 2012.
- Kahan, Dan M., Ellen Peters, Maggie Wittlin, Paul Slovic, Lisa Larrimore Ouellette, Donald Braman, and Gregory Mandel. "The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks." *Nature Climate Change* 2 (2012): 732–35.
- Krutilla, Kerry, David H. Good, and John D. Graham. "Uncertainty in the Cost-Effectiveness of Federal Air Quality Regulations." *Journal of Benefit-Cost Analysis* 6, no. 1 (2015): 66–111.
- McGarity, Thomas O. "Science and Policy in Setting National Ambient Air Quality Standards: Resolving the Ozone Enigma." *Texas Law Review* 93, no. 7 (2015): 1783–1809.
- Schwartz, Joel Mark. "Air Pollution and Health: Do Popular Portrayals Reflect the Scientific Evidence?" American Enterprise Institute Environmental Policy Outlook no. 2, January 2006.
- Van Doren, Peter. *Chemicals, Cancer, and Choices*. Washington: Cato Institute, 1999.

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