

EPA has just issued a [rule](#) tightening the air quality standard for PM_{2.5} — the tiny particles most dangerous to health — from an annual average of 12 µg/m³ (micrograms per cubic meter) down to 9 µg/m³. EPA [estimates](#) that, by the time the rule goes into effect in 2032, it will avoid 4500 premature deaths, 800,000 asthma attacks, and 290,000 lost workdays.

Most likely, by the time this post goes up, someone will have filed a lawsuit to overturn the EPA rule. What legal arguments will challengers raise, and what are their chances of winning? Let's consider the possible challenges one by one.

First, challengers may argue that the science does not support the choice of the 9 µg/m³ standard. The version of the rule that was just released has about 200 double-spaced pages analyzing the research on the health impacts of PM_{2.5}. There are many, many studies, done at different times, in different areas, with different methodologies. Mostly they indicate that the previous standard was too lax.

Here's a sample that gives a sense of the level of detail in EPA's discussion, in this case relating to studies using one particular methodology for estimating PM_{2.5} exposure levels. As you'll see, it's not exactly light reading unless you happen to be an expert on health impacts of air pollution:

“While these studies provide a broader estimation of PM_{2.5} exposures compared to monitor-based studies (i.e., PM_{2.5} concentrations are estimated in areas without monitors), the hybrid modeling approaches result in study-reported means that are more difficult to relate to the annual standard metric and to the use of maximum monitor design values to assess compliance. In addition, and to further complicate the comparison, when looking across these studies, variations exist in how exposure is estimated between such studies, which in turn affects how the study means are calculated. Two important variations across studies include: (1) Variability in spatial scale used (i.e., averages computed across the nation (or large portions of the country) versus a focus on only CBSAs) and (2) variability in exposure assignment methods (i.e., averaging across all grid cells [non-population weighting], averaging across a scaled-up area like a ZIP code [aspects of population weighting applied], and/or applying population weighting).”

It's OK if your eyes glazed over a bit — I imagine that most judges' eyes would too. And if that one passage wasn't enough, imagine a couple hundred double-spaced pages of similar analysis. It would take a very brave judge to look over the lengthy, detailed discussion of the evidence and say that EPA had failed to provide a reasoned justification for its views.

A variation on that argument is that EPA failed to explain why its conclusion now is different from its conclusion under Trump. EPA explained that part of the difference related to giving different weight to some of the evidence considered back then, but that there were also a significant number of new studies that hadn't been considered at all back then or had come in too late for careful analysis. Again, it's going to take a very brave judge to read those studies and decide that they don't provide significant new evidence.

Putting aside quarrels over the science, a natural ground for attacking the standards is that they will be too costly to meet. The problem is that an [opinion](#) by Justice Scalia ruled squarely that EPA can only consider public health, not cost. And as he himself would have said, he was doing no more than following the plain language of the statute. The statute says EPA must set the standards to protect public health with an adequate level of safety. There's nothing there about using cost considerations to reduce the level of protection.

This brings us to more sweeping legal claims. Justice Scalia also rejected a claim that the statute was unconstitutional because it gave too much discretion to EPA. There are some current members of the Supreme Court who want to cut back the amount of discretion that Congress can constitutionally give agencies. But it seems unlikely that they would want to start down this road by overruling a Scalia opinion and in the process declaring most of the Clean Air Act unconstitutional.

Alternatively, challengers might want to argue that the Major Question Doctrine applies because national air quality standards are such a big deal. But EPA has been setting air quality standards for a very long time, during which Congress has significantly amended the Clean Air Act at least twice without changing this section.

It is hard to argue with a straight face that EPA has gone off on a tangent without a clear congressional mandate. EPA has done exactly what Congress has told it to do, setting standards that protect public health with an adequate margin of safety. As in previous cases, it has done so by setting the $9 \mu\text{g}/\text{m}^3$ standard a little below the lowest air concentration shown in studies to have produced negative effects ($9.3 \mu\text{g}/\text{m}^3$). This provides a margin of safety because monitors are generally placed where concentrations are high, meaning that in most place the actual concentration will be below $9 \mu\text{g}/\text{m}^3$.

I don't want to underestimate the creativity of lawyers or the unpredictability of the judicial process — especially given the anti-regulatory bias of some recent appointees. But overturning the new particulate standard in court is going to be an uphill battle.