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The Future of the Exceptional Events Rule

by Paul Jacobson

A study of the Exceptional Events Rule and how it may impact or be impacted by air quality monitoring and modeling in the future.

The U.S. Environmental Protection Agency's (EPA) regulation on "air quality monitoring data influenced by exceptional events," known as the Exceptional Events Rule (the Rule),¹ may significantly impact and be impacted by the future of U.S. air quality, including air quality modeling and monitoring and a wide range of related topics. The Rule allows EPA, in response to proposals (i.e., demonstrations) by state, local, or tribal air agencies, to exclude qualifying high air concentration readings for U.S. Clean Air Act (CAA) criteria pollutants where such readings were caused by "exceptional events," when calculating design values to determine compliance with the U.S. National Ambient Air Quality Standards (NAAQS). Such data exclusion can have regulatory impact, including avoidance of an area's classification as nonattainment. Occurrences that might qualify as exceptional events include but are not limited to wildfires, prescribed fires, high-wind dust events, stratospheric intrusions, chemical spills, volcanic activities, and natural disasters. This article introduces a variety of considerations relevant to the future of the Rule.

Wildfire Emissions

Recent domestic and international wildfires have emitted significant quantities of criteria pollutants into U.S. ambient air² and are the subject of state efforts to exclude event-related data pursuant to the Rule. Wildfire severity and annual impacted acreage has increased recently.³ The Rule and EPA guidance have long addressed wildfires, but EPA is currently taking additional action in response to the above trends.⁴

Response to wildfire trends will impact and be impacted by developments in air dispersion, transport, chemical transformation, and deposition modeling, and air quality monitoring. For example, in 2024 EPA rolled out data visualization and comparison tools that EPA developed to help air agencies identify and evaluate event-influenced fine particulate matter (PM_{2.5}) data for potential exclusion, identifying which impacted days affect design values and whether the events have regulatory significance. Also, in 2021 EPA launched the Wildfire Smoke Air Monitoring Response Technology pilot program to provide air quality monitoring equipment in areas affected by wildfire smoke with limited or no monitoring equipment.⁵ The program loans sensors and mobile monitors that can be attached to vehicles to provide air quality information at different locations during smoke events.

States will likely harness improved monitoring and modeling practices in efforts to avoid non-attainment. As modeling and speciation capabilities improve, states may increasingly submit demonstrations for events occurring far from the downwind exceedance (thus, likely to involve more intervening influences to control for), and state desire to submit such demonstrations may drive such improvements. States may test innovative methods for demonstrating the requisite "clear causal relationship" between exceptional events and

air quality readings (intentional release of tracer chemicals at the site of events seems a possibility). Already, states rely on subject matter experts at the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration for assistance with satellite plume analysis. As an example of the alternative explanations states must anticipate, and the intervening influences states must control for, an environmental nongovernment organization (NGO) recently argued in litigation that certain high readings were caused by lifting COVID restrictions, not wildfires.

Wildfires implicate international relations, as demonstrated by smoke from 2021 and 2023 Canadian wildfires impacting air quality of numerous U.S. states. Minimizing the impacts of wildfire emissions may increasingly require international collaboration. International smoke also implicates the Rule's provision⁶ that the usual required demonstration that an event was "not reasonably preventable or controllable" does not require states to address the prevention and control measures taken outside their state border. The text of the CAA does not include this exemption, although EPA has cited legislative history in response to past critiques on this subject.

Critics of the Rule's application have argued that wildfires and other events have become so frequent that they are no longer exceptional and therefore are not eligible under the Rule. This argument is sometimes made in a simplistic manner that overlooks the structure of the Rule, which does not simply hinge on a certain type of event's frequency. If made thoughtfully, this argument invokes the question of whether an event qualifies as natural or instead caused by human activity. If natural, there is no limit on reoccurrence in the Rule, thus prevalence does not render an event ineligible. Natural events are defined as "an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions."⁷ Increasing wildfires may lead critics to argue that human activity played a causal role in wildfires, or that individual fires do not meet the "not reasonably controllable or preventable" requirement.

The Rule might contribute to future incentivizing and enabling of improved wildfire prevention and mitigation, including prescribed burns, fire suppression, and improved land management. The U.S. Government Accountability Office recently identified a need for improved incentivization of prevention efforts, suggesting this might be accomplished by stricter application of the Rule or even CAA legislative change.⁸ EPA recently has taken steps to remove barriers to states achieving exclusion for high readings caused by prescribed burns, a valuable wildfire prevention tool.⁹

Efforts to incentivize prevention and mitigation implicate the Rule's presumption that if a wildfire occurs predominantly on wild land, it was "not reasonably preventable" and "not reasonably controllable" (both are criteria of the CAA and the Rule), unless EPA determines there is compelling contrary evidence.¹⁰ EPA justified this presumption, which is not in the CAA itself, by saying preparation time and on-site resources to prevent or control the initiation, duration or extent of a wildfire are limited because wildfires are unplanned and occur on remote, rugged land; wildfires present risk of property damage, ecosystem damage and loss of life, which is a strong motivation for suppression and control efforts; "[t]herefore, ... it is not useful to require air agencies to include in their individual wildfire exceptional events demonstrations descriptions of prevention and control efforts employed by burn managers/wildfire responders to support a position that such efforts were reasonable."¹¹ This justification may be open to criticism that motivation and information do not guarantee adequate funding, which is necessary for reasonable prevention and control.

Also, the Rule's definition of a wildfire includes fires caused by unauthorized activity or accidental human-caused actions, or a prescribed fire that has developed into a wildfire. That definition seems in tension with the presumption that wildfires on wild lands were not reasonably preventable or controllable. Further, "a wildfire that predominantly occurs on wildland is a natural event," meaning the "unlikely to recur in the same place" requirement does not apply. EPA stricter application of the Rule (by amending the rebuttable presumption or otherwise) might incentivize states to increase prevention and mitigation funding. EPA's level of interest in this type of incentive is not clear; recent EPA publications on the Rule and wildfires seem more focused on streamlining exclusion of wildfire-influenced data (via tiering and other methods) than on using the Rule to incentivize prevention.¹²

Climate Change

Climate change may contribute to increasing prevalence and severity of exceptional events, including wildfires (via drought and extreme heat) and severe winds,¹³ prompting increased volume of state demonstrations. Wildfires have potential for a negative feedback loop, with climate change

causing increasing prevalence and severity of wildfires, and wildfires contributing to climate change by releasing carbon dioxide (CO₂) during combustion (and decomposition), and decreased forest capacity for CO₂ absorption. Using the Rule to incentivize wildfire prevention and mitigation may also combat climate change.

Environmental Justice

EPA may increasingly consider environmental justice (EJ) implications as it applies the Rule, as part of EPA's own EJ emphasis and in response to outside pressures. A commenter on EPA's 2023 approval of a Michigan demonstration under the Rule argued that the current system of states submitting a demonstration to EPA, which EPA evaluates using a weight of evidence approach, is biased: "The state or local air agency that submits a demonstration is a proponent of the demonstration, and therefore has incentive to either ignore or downplay evidence that is unfavorable to the demonstration. EPA's limitation of other evidence to that 'otherwise known to the agency' abdicates EPA's duty to environmental justice communities. Such communities may not have the technical expertise to make relevant, unfavorable evidence 'known to the agency.' Thus, EPA's approach is inherently biased in favor of granting exceptional event exclusions." EJ proponents may also argue that EJ communities suffer disproportionately by reclassification from nonattainment to attainment, thus EPA should be careful when using the Rule to enable such reclassifications.

Adequacy of EPA Resources

EPA may be under-resourced to respond to the current volume of state demonstrations.¹⁴ The volume of demonstrations may increase in response to increased prevalence and severity of exceptional events, modeling improvements, and tightening NAAQS. Reviewing demonstrations is currently resource-intensive.¹⁵ The difficulty of reviewing demonstrations may increase if states increasingly submit demonstrations for far-off international events. The above factors suggest the possibility that EPA will seek increased funding and staffing to review demonstrations, consider procedural streamlining (EPA recently stated its intent to ensure the Rule provides an "efficient and clear pathway for excluding data"),¹⁶ and or consider whether artificial intelligence can assist with data analytics. State air agencies may also seek or reallocate resources to prepare demonstrations.



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Additional Considerations

EPA tightening of NAAQS may increase state use of the Rule, which use may reduce the air quality impact of the tightening of NAAQS. EPA revised the PM_{2.5} primary annual NAAQS in February 2024 and suggested that the Rule may impact initial area designations.

Critics of the Rule say it disconnects design values and attainment classifications from reality. GAO's 2023 report noted: "[T]hese stakeholders said that people are still breathing polluted air from wildfire smoke irrespective of NAAQS compliance status. Similarly, EPA officials said that this approach identifies air pollution events beyond the control of the states for purposes of regulation, but does not remove the unhealthy air pollution." If criteria pollution from

wildfires and similar events increases, this disconnect may grow. The Rule does not cap the number of violative readings that can be excluded. As a portion of the U.S. population gained greater mobility to live and work where they please post-COVID, air quality data that accurately reflects air quality would enable better-informed decisions on where to live, potentially relevant to medical and human health costs.

Conclusion

The author is not aware of EPA signaling intent to amend the Rule. EPA seems to instead be focusing efforts on addressing many of the above factors via guidance-level documents and initiatives, some discussed above. The Rule seems a subject warranting significant EPA attention. **em**

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References

1. 40 C.F.R. §§ 50.1, 50.14, and 51.930, promulgated pursuant to Clean Air Act § 319(b), 42 U.S.C. 7619(b).
2. Wildland fires – including both wildfires and prescribed fires – account for 44 percent of the nation's primary emissions of fine particulate matter (PM_{2.5}), per EPA's Feb. 7, 2024, Fact Sheet on Wildland Fire, Air Quality, and Public Health Considerations.
3. U.S. Government Accountability Office March 2023 Report to Congress on Wildfire Smoke, page 6.
4. See, e.g., EPA Fact Sheet, supra FN 2; Nov. 9, 2023, multi-agency MOU on Wildland Fire and Air Quality Coordination.
5. See <https://www.epa.gov/air-sensor-toolbox/wildfire-smoke-air-monitoring-response-technology-wsmart#:~:text=The%20Wildfire%20Smoke%20Air%20Monitoring,concern%20in%20the%20United%20States>.
6. 40 C.F.R. § 50.14(b)(8)(vii).
7. 40 C.F.R. § 50.1(k).
8. Supra FN 3 at pages 39-45 and 48.
9. EPA Fact Sheet, supra FN 2 at page 4.
10. 40 C.F.R. § 50.14(b)(4).
11. 81 FR 68216, 68248 (Oct. 3, 2016).
12. See, e.g., EPA Fact Sheet, supra FN 2, stating EPA intent to "offer clarifications or information to help support" demonstrations, and EPA's development of new tools to "improve and support an efficient process for" designations. See also, Multi-agency MOU, supra FN 4, stating intent to "ensure that EPA's Exceptional Events Rule . . . provide[s] an efficient pathway for exclusion of air monitoring data influenced."
13. See 2023 Fifth National Climate Assessment Overview.
14. GAO Report to Congress, supra FN 3, at pages 39-40.
15. 81 FR 68216, 68264 (Oct. 3, 2016).
16. 89 FR 16202, 16367 (March 6, 2024).

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