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2016 Revisions to the Exceptional Events Rule: Update to Frequently Asked Questions

United States Environmental Protection Agency

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Note: This **MONTH DATE**, 2018, document replaces the "Interim Exceptional Events Rule Frequently Asked Questions" document posted on May 14, 2013.

2016 Revisions to the Exceptional Events Rule: Update to Frequently Asked Questions

The 2016 revisions to the Exceptional Events Rule[1] supersede the EPA's Exceptional Events Rule of 2007[2], including guidance and policy documents, and revised a regulatory process codified at 40 CFR parts 50 and 51 (50.1, 50.14 and 51.930). The Exceptional Events Rule recognizes that each potentially eligible event has unique characteristics that require case-specific demonstration and evaluation. Therefore, the Exceptional Events Rule continues to rely on a "weight-of-evidence" approach for evaluating each demonstration to justify excluding air quality data influenced by an exceptional event. The EPA acknowledges that, due to a variety of factors including the type and severity of the event, pollutant concentration, spatial extent, temporal extent, and proximity of the event to the violating monitor, some exceptional events may require more limited demonstrations than others. The EPA encourages an iterative demonstration development process informed by frequent communication and guided by a principle of "right-sizing" demonstrations.

Air agencies and other stakeholders have raised technical and procedural questions about implementing the Exceptional Events Rule. This document is an update to the 2013 "Interim Exceptional Events Rule Frequently Asked Questions" document, and is intended to answer frequently asked air agency questions about the 2016 Exceptional Events Rule[3]. The EPA recognizes the limited resources of air agencies that prepare exceptional events demonstrations and EPA Regional offices that review them. One of the EPA's goals in developing exceptional events implementation guidance is to establish clear expectations to enable air agencies to better manage resources as they prepare exceptional events demonstrations. The appropriate level of supporting documentation will vary on a case-by-case basis under the weight-of-evidence approach. The EPA anticipates that the level of resources needed to prepare (and review) packages will decrease as we continue to identify ways to streamline the process and share new example demonstrations and analyses.

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[1] "Treatment of Data Influenced by Exceptional Events; Final Rule," 81 FR 68216, October 3, 2016.
[2] "Treatment of Data Influenced by Exceptional Events; Final Rule," 72 FR 13563, March 22, 2007.
[3] References to "air agencies" are meant to include state, local, and tribal air agencies.

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Each section contains related questions and answers. Readers of this document can find additional information, including the final rule and example demonstrations, at the EPA's exceptional events website located at:

https://www.epa.gov/air-quality-analysis/exceptional-events-rule-and-guidance.

The exceptional events website also contains additional implementation resources, including *Guidance on the Preparation of Exceptional Events Demonstrations for* ***Wildfire Events*** *that May Influence Ozone Concentrations*

Disclaimer
The Exceptional Events Rule is the source of the regulatory requirements for exceptional events and exceptional events demonstrations. This document provides responses to frequently asked questions regarding the Exceptional Events Rule and does not impose any new requirements and shall not be considered binding on any party. Note: If and when the EPA takes a regulatory action that hinges on a decision to exclude data under the Exceptional Events Rule, the EPA will consider and respond to any public comments on that regulatory action that address any aspect of a supporting exceptional events demonstration.

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A. Prior to Developing a Demonstration – Initial Notification and Data Flagging

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Note: "Flag" is the common terminology for a data qualifier code in the EPA's AQS (Air Quality System). Unless explicitly noted, the process of "flagging" data refers to adding Request Exclusion ("R") data qualifier codes to selected data in AQS. "R" flags are the only AQS flags that satisfy Exceptional Events Rule data flagging as part of the required Initial Notification Process. The EPA can act/concur only on an "R" flag.

A.1. Question: Who can submit an exceptional events demonstration?

Answer: The EPA may only take action on those demonstrations that meet the requirements of the Exceptional Events Rule and are submitted by one (or more) of the following authorized agencies:

- all state air agencies;
- local air quality agencies to whom a state has delegated relevant responsibilities for air quality management;
- tribal air quality agencies operating ambient air quality monitors that produce regulatory data;
- and FLMs or other federal agencies to whom the relevant state/tribal air agency(ies) has granted approval to submit a demonstration.

A.2. Question: What is the purpose of the initial notification process, and what are the steps involved?

Answer: The initial notification process is a new requirement in the 2016 Exceptional Events Rule that is intended to promote early and frequent communication between air agencies and EPA Regional offices when air agencies first begin to consider developing an exceptional events demonstration. The initial notification process requires air agencies to signal their intent to request exclusion of one or more air quality measurements due to an exceptional event by providing an initial notification to the EPA, creating an initial event description, and flagging the associated data in the AQS database. The initial notification may be conveyed as an official letter, electronic mail, or other means of communication from an air agency official with authority to do so.

Each EPA Regional office can develop its own suggested procedures for the initial notification process, and air agencies are encouraged to contact their EPA Regional office to discuss options. Stakeholders are encouraged to review the 2016 Exceptional Events Rule and preamble, which both contain extensive information about the initial notification process, and can be viewed at the following link on the Federal Register website:

https://www.federalregister.gov/documents/2016/10/03/2016-22983/treatment-of-data-influenced-by-exceptional-events

A.3. Question: How does the event data flagging process work in AQS as part of the initial notification process?

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Answer: Flagging data and creating the event in AQS is part of the initial notification process, which is intended to promote communication between air agencies and EPA Regional offices when air agencies begin to consider developing an exceptional events demonstration. Air agencies should flag data and create the event in AQS for data requested for exclusion following initial notification and discussion with the EPA Regional office that results in submitting a demonstration

To create a new event within AQS, air agencies should enter an "initial event description" that contains a unique event name; the type of the event (e.g., high wind dust, volcanic eruption, other); a brief description of the event; and the scope of the event in terms of geography and time (*e.g.*, likely affected area using latitude and longitude and a radius of influence and beginning day/time and ending day/time). AQS allows air agencies to associate specific AQS sites and potentially affected monitors and specific data points with a given event. This enables air agencies and the EPA to "flag" selected data for multi-day and multi-monitor events in a single step rather than adding this information on a per-entry basis. The capability to associate monitors with an event defined in time and space is intended to save resources.

A.4. Question: How long after an event occurs can air agencies flag data and submit an exceptional events demonstration?

Answer: The 2016 Exceptional Events Rule revisions removed the "general schedule" deadlines for data flagging and demonstration submission. Under the 2016 Exceptional Events Rule, there are only demonstration submission deadlines for data that will influence the initial designation of areas for any new or revised national ambient air quality standard. These deadlines are identified in Table 2 of section 50.14(c)(2)(vi) of the Exceptional Events Rule. In all cases, air agencies should enter "R" flags in AQS for data requested for exclusion following discussion with the EPA Regional office that results in submitting a demonstration as part of the initial notification process, and before the demonstration is submitted to the EPA. The EPA will not be able to act on exceptional events demonstrations for event-related data that has not been assigned an "R" flag in AQS.

As an alternative to "R" flags, air agencies are encouraged to use "I" series flags to initially identify values they believe may have been affected by an event, but for which they do not yet know if they will request exclusion or develop a demonstration (see Question A.5 below for additional information on the difference between "R" flags and "I" flags in AQS).

A.5. Question: What is the difference between the "R" series flags and the "I" series flags, and how should they be used?

Answer: Within AQS, air agencies can use two types of data qualifier codes: *Request Exclusion* flags ("R") or *Informational Only* flags ("I"). Agencies should use the "I" series flags when identifying informational data and the "R" series flags to identify data points for which the agency intends to request an exceptional event exclusion and the EPA's concurrence. For example, air agencies may use an "I" series flag to initially identify values they believe may have been affected by an event, but for which they do not yet know if they will request exclusion or

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develop a demonstration. Air agencies may also use an "I" series flag to identify data for which they know they will not exclude or develop a demonstration, but would like to document that the values were potentially influenced by an event.

Once the air agency collects additional supporting data and determines it intends to develop an exceptional events demonstration, it may change the "I" series flag to an "R" series flag. Or, the air agency may find that additional information does not support flagging the data for exclusion, and the air agency may delete the flag or retain the "I" series flag. Air agencies may also want to use "I" flags to identify historical data that may have been influenced by an event in future exceptional events demonstrations related to other events. Alternatively, air agencies may also use the "I" series flags simply to note activities or conditions occurring on the data collection day that are unrelated to exceptional events. The EPA does not intend to review or act on the "I" series flags.

Air agencies should also be advised that use of "R" (request exclusion) flags may trigger mitigation plan requirements. The use of "I" (informational) flags will not trigger mitigation plan requirements. (*See Section F of this document for additional details on mitigation plan requirements.)*

A.6. Question: Can an air agency flag any data in AQS?

Answer: Yes, but only "R" flags are intended to identify data that might have a regulatory significance and for which an air agency intends to request exclusion and submit a demonstration. Air agencies should use the "I" series flags to identify values for informational purposes (see Question A.5). AQS only allows the EPA to place concurrence flags on data identified with an "R" flag. "I" flags never affect regulatory summary statistics (*e.g.*, design values, number of exceedances) generated by AQS for NAAQS determinations purposes. "R" flags will not affect the regulatory summary statistics unless or until they are concurred by the EPA.

Further, although the Exceptional Events Rule does not prohibit air agencies from flagging individual concentration values below the level of the NAAQS, air agencies can generally only request exclusion for data that contribute to an exceedance or violation of the NAAQS. See Question A.9 for more information, including clarifications and examples, particularly for $PM_{2.5}$ and PM_{10}, in which flagging individual concentration values below the level of the NAAQS is acceptable.

Additionally, the EPA intends to provide additional clarification in 2018 regarding determinations that may be influenced by the exclusion of data under the 2016 Exceptional Events Rule, and those determinations that may be influenced by the exclusion of data through other existing mechanisms ("alternate paths").

A.7. Question: What flags does AQS use to describe fires?

Answer: Land Management Agencies modified their fire-related definitions after the EPA promulgated the 2007 Exceptional Events Rule. The EPA has incorporated the fire-related

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terminology into the exceptional events guidance documents to ensure consistency (see also Question B.7). These definitional changes resulted in corresponding changes to fire-related flags in AQS. The EPA eliminated from AQS the Wildland Fire Use Fire – United States ("IU") and ("RU") flags and the Forest Fire ("E") flag. The EPA continues to use the following flags to describe fires:

- IF – Fire – Canadian (Informational Only)
- IG – Fire – Mexico/Central America (Informational Only)
- IM – Prescribed Fire (Informational Only)
- IP – Structural Fire (Informational Only)
- IT – Wildfire – US (Informational Only)
- RF – Fire – Canadian (Request Exclusion)
- RG – Fire – Mexico/Central America (Request Exclusion)
- RM – Prescribed Fire (Request Exclusion)
- RP – Structural Fire (Request Exclusion)
- RT – Wildfire – US (Request Exclusion)

The EPA retained the Fire – Canadian ("IF/RF") and Fire – Mexico/Central America ("IG/RG") flags because these flags indicate the jurisdictional origin of the fire (*i.e.*, outside of the submitting state/outside of the United States). Emissions from fires originating outside of the United States that affect air quality concentrations in the United States may qualify for treatment under the Exceptional Events Rule, and may also qualify for regulatory treatment under the international transport provisions of 40 CFR part 179(b) of the Clean Air Act.

A.8. Question: Some criteria pollutants have multiple forms, averaging periods, and/or levels of the NAAQS. If the EPA concurs on an exceptional events demonstration for a measurement that affects one particular form or level of NAAQS, does the EPA automatically exclude the same measurement for all the other applicable forms and levels of the NAAQS for that pollutant?

Answer: No. Air agencies should request (including flagging relevant data in AQS) and provide support for exclusion of monitored pollutant concentrations separately for each NAAQS that applies to the pollutant. The EPA will similarly provide separate concurrences.

The EPA did finalize regulatory language to exclude all 24 1-hour values within a given event-affected day for $PM_{2.5}$ and PM_{10} data obtained via monitor instruments that provide 1-hour measurements. The exclusion of all hours in an event-affected day is consistent with the approach for filter-based analyzers, and eliminates the calculation of uncertain and potentially biased daily values for $PM_{2.5}$ and PM_{10} NAAQS.

The EPA concurrence flags entered into AQS prior to the March 2010 re-engineering of AQS to accommodate the Exceptional Events Rule did not indicate the specific single NAAQS or the specific combination of NAAQS for which the exclusion was approved. These "legacy" concurrence flags have been converted to the new approach as follows:

- For ozone, all legacy flags were treated as applying to both the 0.08 ppm 8-hour NAAQS and the 0.12 ppm 1-hour NAAQS. This default was chosen because as of March 2010,

designations under the 2008 NAAQS of 0.075 ppm had been suspended pending reconsideration of that NAAQS, and AQS staff were not aware of any concurrences already granted with respect to the 0.075 ppm NAAQS.

- For $PM_{2.5}$, all concurrences on events with dates prior to January 1, 2005 (meaning the date of the monitored concentration, not the date of the EPA's concurrence) were presumed to be applicable only to the annual $PM_{2.5}$ NAAQS. This default was chosen because prior to the revision of the 24-hour $PM_{2.5}$ NAAQS in 2006, violations of the 1997 24-hour NAAQS were extremely rare.
- For $PM_{2.5}$, all concurrences on events with dates of January 1, 2005 through March 2010 were presumed to be applicable only to the 24-hour NAAQS because there were no revisions to the annual $PM_{2.5}$ NAAQS during this timeframe, so designations of nonattainment for the annual $PM_{2.5}$ standard were extremely rare. This 24-hour $PM_{2.5}$ NAAQS default was chosen because it was possible for designations under the 2006 24-hour NAAQS to be based on data as early as 2005.
- For PM_{10}, all concurrences were presumed to apply to the 24-hour NAAQS, as the annual PM_{10} NAAQS was revoked in 2006.[4]
- For CO, all concurrences were presumed to apply to both the 1-hour and the 8-hour NAAQS. This default was chosen to ensure that the concurrence applied to whichever NAAQS had been exceeded and was the basis for the exclusion request.
- For SO_2, all concurrences were presumed to apply to both the 24-hour and the annual NAAQS. This default was chosen to ensure that the concurrence applied to whichever NAAQS had been exceeded and was the basis for the exclusion request. No flags were assumed to apply to the 1-hour NAAQS because the 1-hour SO_2 standard was not promulgated until June of 2010, after the AQS re-engineering.
- For Pb, all concurrences (if any existed) were presumed to apply to the quarterly average NAAQS of 1.5 $\mu g/m^3$. This default was chosen because March 2010 was prior to the EPA issuing final designations under the 2008 Pb NAAQS of 0.15 $\mu g/m^3$.
- For NO_2, all concurrences were presumed to apply to the annual NAAQS because the 1-hour NO2 standard was not promulgated until February of 2010.

For concurrences on events with dates after the March 2010 re-engineering of AQS, the EPA will specify the NAAQS to which the concurrence applies. If this defaulting scheme does not properly represent the actual concurrence action that was taken by the EPA Regional office, the Regional office should revise and correct the concurrence flags, if it has not already done so.

Air agencies can find detailed information on the use of events flags in AQS in a tutorial posted at:

https://www3.epa.gov/ttnairs1/airsaqsORIG/manuals/ExceptionalEventTutorial.pdf.

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[4] The EPA realizes that many of the defaulted EPA concurrences for pre-2006 PM_{10} concentrations that were below the level of the 24-hour PM_{10} NAAQS actually were applicable to the annual PM_{10} NAAQS, but this approach was the most practical way to ensure that all other concurrences originally intended to be applicable to the 24-hour NAAQS were preserved. Because concentrations below the level of the 24-hour NAAQS have no effect on attainment determinations for the 24-hour NAAQS, no error can come from treating such values as having been concurred. Nevertheless, the EPA Regional office may choose to update these concurrence flags as time permits.

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The tutorial discusses concurrence flags on page 20.

A.9. Question: When is it appropriate for air agencies to flag concentration values that are equal to or less than the level of the relevant NAAQS? Under what circumstances will the EPA concur on such flags?

Answer: AQS currently allows an air agency to flag any measured concentration values it chooses, including values at or below the level of the relevant NAAQS. With respect to the circumstances when the EPA may concur on a flagged value below the level of a NAAQS, we offer the following clarifications:

CAA section 319(b) and the definition of exceptional event in the 2016 Exceptional Events Rule state that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation. The 2016 Exceptional Events Rule preamble states that "the concentration values used in calculating a violating 3-year design value could be considered for exclusion under the Exceptional Events Rule only if the concentration itself is an exceedance or results in a violating design value. If the elevated concentration is not itself an exceedance nor does it result in a violating design value, then the value in question could not be considered as an exceptional event."

The EPA also finalized rule language that will allow an air agency to compare a 24-hour concentration of any NAAQS pollutant to the NAAQS for the same pollutant with a longer averaging period as part of a weight-of-evidence showing for the clear causal relationship with respect to the NAAQS with the longer period. Applying this rule revision to $PM_{2.5}$ will allow an air agency to compare a 24-hour averaging period for $PM_{2.5}$ that is greater than the relevant 12 or 15 $\mu g/m^3$ annual $PM_{2.5}$ NAAQS to either the 24-hour $PM_{2.5}$ NAAQS (*i.e.*, 35 $\mu g/m^3$) or the relevant annual NAAQS (provided the air agency specifically requests exclusion for both NAAQS and assuming there is regulatory significance for both standards). For example, an agency could request to exclude a concentration of 32 $\mu g/m^3$, which when excluded from the calculated 3-year average, could result in a 98th percentile value for the year of 29 $\mu g/m^3$. When 29 $\mu g/m^3$ is averaged with the 98th percentile value for the other two years, the resulting design value attains the 24-hour standard.

The EPA intends to provide additional clarification in 2018 regarding determinations that may be influenced by the exclusion of data under the 2016 Exceptional Events Rule, and those determinations that may be influenced by the exclusion of data through other existing mechanisms ("alternate paths").

A.10. Question: The "j" flag was listed for "Construction/Demolition." The "IE/RE" flag is for demolition; can it also be used for construction?

Answer: The "j" flag is obsolete and can no longer be used. The "IE/RE" flag should <u>not</u> be used for construction.

Generally, construction activity is not considered to be exceptional. Reasonable controls capable of preventing localized NAAQS exceedances should be available during most construction

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events. In some cases, however, construction activities may involve very high-energy, emissions-generating physical processes, such as explosive excavation. Dust control measures may not be adequate to prevent exceedances / violations in the vicinity of this type of activity.

If an agency wishes to "flag" data related to exceedances caused by some construction activity, the agency should use the *Other* ("IL/RL") exceptional events flag. Air agencies should use the "IE/RE" flag only when an exceptional demolition event occurred and the air agency wishes to flag the data for exclusion as an exceptional event. Air agencies using either the "IE/RE" flag or the "IL/RL" flag to identify an exceptional event should show in a demonstration submittal that all reasonable controls were in place during the construction / demolition activity, and that those controls proved inadequate to prevent NAAQS exceedances. The demonstration would also need to meet all other requirements of the Exceptional Events Rule, including the "human activity unlikely to recur at a particular location" criterion.

B. Developing a Demonstration

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B.I. General Topics

B.1. Question: Is there a template or example for preparing a demonstration document?

Answer: Air agencies should consult the 2016 Exceptional Events Rule and preamble and the appropriate EPA Regional office prior to preparing a demonstration. In addition, guidance documents, example demonstrations, and other rule implementation resources, are available online at:

https://www.epa.gov/air-quality-analysis/treatment-air-quality-data-influenced-exceptional-events

B.2. Question: What are the required elements for an exceptional events demonstration?

Answer: An approvable exceptional events demonstration must include the following six elements:

1) A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);
2) A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;
3) Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times. The Administrator shall not require a State to prove a specific percentile point in the distribution of data;
4) A demonstration that the event was both not reasonably controllable and not reasonably preventable;
5) A demonstration that the event was caused by human activity that is unlikely to recur at a particular location or was a natural event; and

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6) Documentation that the submitting air agency followed the public comment process.

Additional details on what kinds of information could be helpful to include in the sections above can be found in the Exceptional Events Rule and preamble, supporting guidance documents, example demonstrations, and other rule implementation tools, all available online at:

https://www.epa.gov/air-quality-analysis/treatment-air-quality-data-influenced-exceptional-events

B.3. **Question:** Is the Exceptional Events Rule's demonstration requirement to provide evidence to support "analyses comparing the claimed event-influenced concentrations(s) to concentrations at the same monitoring site at other times" a test that can be "passed" or "failed" based on the outcome of the statistical comparison? For example, must the concentration affected by an event exceed a specific percentile rank in the historical data?

Answer: There is no specific percentile rank that an air agency must demonstrate in this monitoring data comparison. The EPA will use a weight-of-evidence approach to review each demonstration on a case-by-case basis. The air agency's role in satisfying this element is to provide appropriate analyses and statistics comparing the claimed event-influenced concentrations(s) to historical concentrations at the same monitoring site.

A comparison of event concentrations with historical concentrations will help the EPA determine whether the air agency has satisfied the "clear causal relationship" criterion. Although there is no minimum percentile rank for the event concentration(s) compared to historical concentrations, the EPA generally anticipates that historical comparisons that show the event-related concentration(s) to be similar to historical concentrations will likely indicate a less conclusive clear causal relationship. A comparison of event-related concentrations that are similar to historical concentrations would not necessarily preclude concurrence, but a demonstration without a comparison to historical concentrations would likely not meet the requirements of the Exceptional Events Rule.

The EPA recommends more than one type of statistical analysis be included when comparing event-related concentration(s) to historical concentrations, such as those described in the answer to Question B.4. It is important to note, however, that no outcome of the statistical comparison, by itself, can guarantee successful demonstration of a clear causal relationship.

Submitting agencies are encouraged to discuss comparisons of the event-related concentration(s) to historical concentrations with the appropriate EPA Regional office prior to submitting a demonstration package to determine what information might be available and appropriate to support the demonstration.

B.4. **Question:** What types of analyses would most likely be supportive of an approvable demonstration as part of the comparison of event concentration(s) to historical concentrations?

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Answer: To aid the review process, reduce requests for additional information, and facilitate the EPA's understanding of the air agency's position, a submitting air agency can consider providing some of the following types of statistics, graphics, and explanatory text, which are also described in Table 2 on page 68242 of the preamble to the Exceptional Events Rule (81 FR 68216, October 3, 2016):

- **Comparison of concentrations on the claimed event day(s) with past historical data.** The historical comparisons can be made on an annual and/or seasonal basis, depending on which is more appropriate. For example, if PM or ozone data at the location show clear seasonality (*i.e.*, exceedances are nonexistent or extremely rare in some seasons but not others, or concentrations vary according to season due to meteorological conditions), discussing that information in the demonstration is likely appropriate. In contrast, if exceedances tend to occur throughout the year, analysis of annual data may be more appropriate. For seasonal comparisons, an approvable demonstration will ideally include all available seasonal data from at least 5 years, if available. We recognize, however, that these data may not be available for all monitors and/or all pollutants. If data are not available, please consult with the reviewing EPA Regional office.

The analysis should describe the seasonal nature of the pollutant(s), if appropriate, for the location being evaluated. Depending on the quantity of data, it may be appropriate to present monthly maximums; however, generally it is not appropriate to present monthly-averaged daily data or any other average of the daily data, since this masks high values. Regardless of whether seasonal or annual data are presented, data are most helpful when provided in the form relevant to the standard of the pollutant that is being considered for data exclusion. Specific examples of analyses of annual and seasonal data, as well as analyses of historical $PM_{2.5}$ speciation data and spatial distributions, can be found in example demonstrations on the EPA's exceptional events website at:

https://www.epa.gov/air-quality-analysis/exceptional-events-submissions-table-2016-rule.

It may also be useful to analyze concentrations of non-NAAQS pollutants which may be precursors or indicators of the NAAQS pollutants in question, or of a particular type of event. For example, although $PM_{2.5}$ is generally not considered to be a precursor or indicator of ozone, elevated $PM_{2.5}$ may be an indicator of smoke, and therefore may provide supporting evidence that elevated ozone in the same area was at least partially attributable to a wildfire event.

Additionally, it may be useful for the comparison of concentrations on the claimed event day(s) with past historical data to label appropriate data points as being associated with previously concurred exceptional events, suspected exceptional events, or other unusual occurrences (see Question B.5. below).

- **Comparison of concentrations on the claimed event day with a set of similar days:** Similar days could include neighboring days (*e.g.,* a time series of two weeks) and/or other days with similar meteorological conditions (possibly from other years). Relevant meteorological conditions may include temperature, wind speed and direction, relative humidity, daily temporal patterns, and other key factors depending on the pollutant. This type of comparison could

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demonstrate that the event caused higher concentrations than would be expected for given meteorological and/or local emissions conditions.

- **Percentile rank of concentration relative to annual data:** The percentile rank of the event-day concentration should be provided for the event day relative to all measurement days over the previous 5 years. To ensure statistical robustness, the EPA generally recommends that submitting agencies include a minimum of 300 data points in this calculation. The daily statistic (*e.g.*, 24-hour average, maximum 8-hour average, or maximum 1-hour) should be appropriate for the form of the standard being considered for data exclusion.

- **Percentile rank of concentration relative to seasonal data:** The percentile rank of the event-day concentration should be provided for the event day relative to all monitored concentrations for the season (or appropriate alternative 3-month period) of the event over the previous 5 years. It is generally appropriate to use the same time horizon as used for the percentile rank calculated relative to annual data. The use of percentile ranks should not be seen as a bright line to be passed or failed when comparing concentrations requested for exclusion with historical values.

The evidence comparing the event-affected concentration(s) with historical concentrations is most helpful to an air agency's demonstration if it shows that the event-affected concentration is high compared to all, or nearly all, historical concentrations generated by normal emissions and under normal ambient conditions. This scenario makes it more plausible that the event caused the observed excess concentration rather than another cause on the same day. If similar events have been very rare in the past, it may be possible to make this point by labeling appropriate data points as being associated with concurred exceptional events, suspected exceptional events, or other unusual occurrences. To illustrate the influence of these events, air agencies may also include comparisons omitting such points.

Example Comparisons of Event-Related Concentration(s) to Historical Concentrations

The discussion and graphics that follow illustrate the type of analyses that an air agency might include in a submittal comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times. Additional examples of graphics are also available in the presentation located at:

https://www.epa.gov/sites/production/files/2015-05/documents/ideasforshowingeeevidence.pdf.

The following figures illustrate seasonal emission variability. The first figure below indicates an exceedance of the $PM_{2.5}$ standard in late spring (late 2nd quarter). This concentration is outside the range of the 5-year historical data set for $PM_{2.5}$ during the 2nd quarter. The second figure indicates a similar $PM_{2.5}$ concentration, but in a different part of the country where similar exceedance concentrations occur throughout the year. This comparison suggests that, in this particular example, some non-event process(es) can cause high concentrations throughout the year. In the first case, a seasonal comparison of historical concentrations generally would be appropriate, while annual analysis might be more appropriate for the second case, to provide the most robust and representative historical data set.

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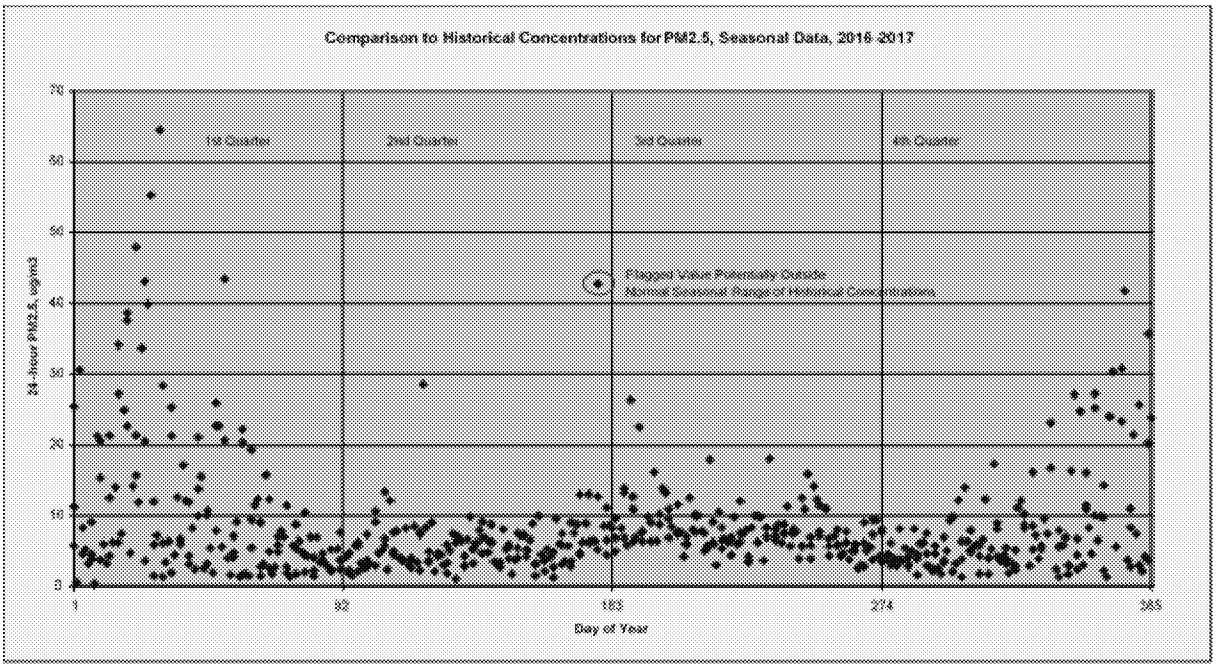

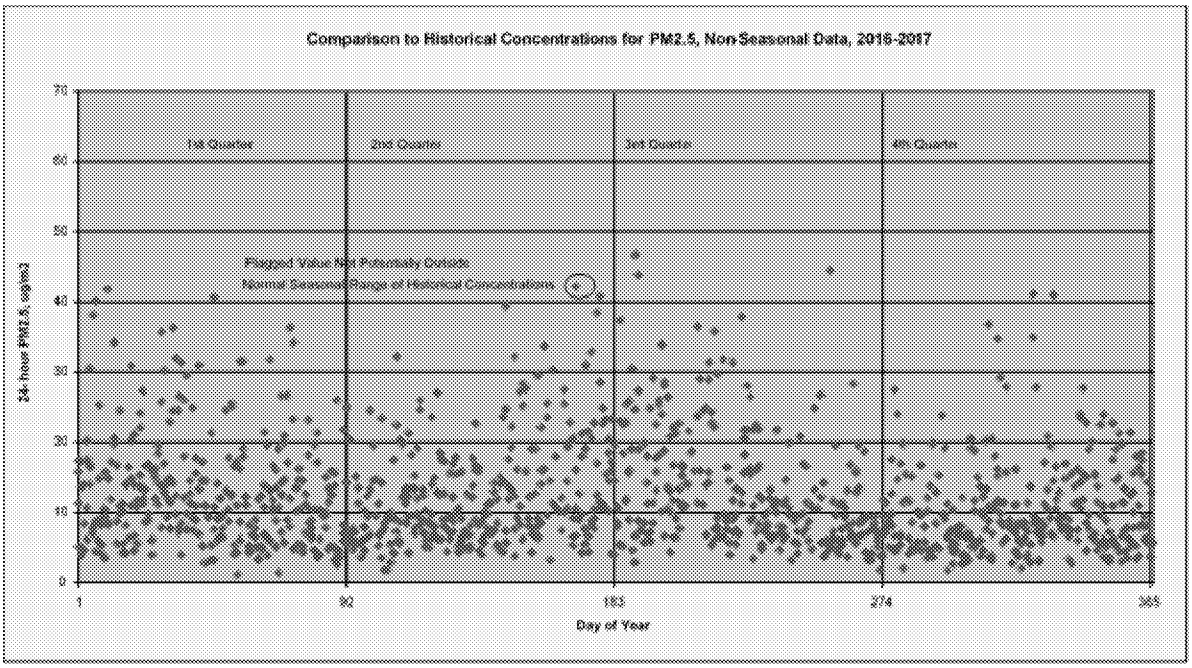

B.5. **Question:** When comparing event concentrations to historical concentrations, how can air agencies identify and provide evidence to show that specific past elevated concentrations were associated with known or suspected exceptional events?

Answer: As described in the preamble of the Exceptional Events Rule, the EPA encourages air agencies to, where applicable in historical concentration plots, label past high data points as being associated with previously concurred exceptional events, suspected exceptional events,

other unusual occurrences, or high pollution days due to normal emissions. Identifying this information may be helpful in appropriately characterizing non-even-related historical concentrations. The EPA recommends providing evidence to support the identification when possible. For example, air agencies may provide a summary explanation of a past suspected event along with basic evidence of its occurrence such as news reports, photographs, existing data and/or analyses (*e.g.*, back trajectories, satellite imagery, record of flagged data in AQS) to support the claim that elevated concentrations were influenced by the event. Air agencies should consult with their EPA Regional office to determine what information would be reasonable to identify potential past event influences on historical data.

Where applicable, air agencies may include historical comparison plots with and without known or suspected exceptional events points to better illustrate the unusual nature of the exceptional event(s) in question. Supporting information regarding historical concentrations influenced by past events will be taken into account along with all other information and analyses in the demonstration as part of the weight of evidence for a clear causal relationship. The application of "I" flags in AQS can help track and identify historical event-related data for this purpose.

B.6. **Question:** What other types of evidence can air agencies include in a demonstration to support that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation?

Answer: The EPA evaluates the clear causal relationship criterion using a weight-of-evidence approach to evaluate the event and whether emissions of the pollutant of interest were transported from the area of the event to the monitor(s) recording the exceedance. The air agency's analyses should provide supporting evidence of transport from the event onset location to the monitor(s) being claimed to have been affected and reached ground level at the location(s) of the affected monitors. Some examples of evidence of air pollutant transport to the monitor(s) include: speciation data at the monitor; backward and forward model trajectories; satellite imagery; and spatial extent maps comparing event days and non-event days. The EPA recommends air agencies consult with their EPA Regional office to identify which types of analyses may be most useful in supporting the weight of evidence for a clear causal relationship, and to rule out analyses that may be unnecessary.

Where a single event results in exceedances or violations of multiple NAAQS (*e.g.*, annual and 24-hour $PM_{2.5}$), the submitting agency needs to address the unique features of each NAAQS exceedance or violation (*e.g.*, potentially different monitoring locations, different historical concentration patterns). An air agency could submit a single demonstration package for a single event affecting multiple NAAQS provided the air agency clearly identifies all the NAAQS for which data exclusions are being sought along with the appropriate supporting evidence in the demonstration relevant to each specific NAAQS.

Examples of supporting analyses can be found in example demonstrations on the EPA's exceptional events website at:

https://www.epa.gov/air-quality-analysis/exceptional-events-submissions-table-2016-rule.

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B.II. Fire-Related Events

B.7. **Question:** What fire-related definitions should air agencies consider as they develop exceptional events demonstrations for wildfires or prescribed fires on wildland?

Answer: The EPA uses the following fire-related terminology, consistent with the definitions in 40 C.F.R. § 50.1, in the exceptional events guidance documents to ensure consistency:

Prescribed fire – Any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives.

Wildfire – Any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; accidental, human-caused actions, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event.

Wildland – An area in which human activity and development are essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered.

B.8. **Question:** What types of evidence can air agencies include in a demonstration to support a clear causal relationship between emissions from a fire event and ozone exceedances at affected monitor(s)?

Answer: The EPA has developed a separate guidance document to aid air agencies in preparing a demonstration and supporting a clear causal relationship for wildfire events that are believed to have influenced ozone concentrations. Air agencies can find the document, *Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations*, on the EPA's exceptional events website at:

https://www.epa.gov/air-quality-analysis/exceptional-events-rule-and-guidance

The EPA's exceptional events website also includes example concurred demonstration packages that include different types and scopes of analyses for ozone-related exceptional events.

B.9. **Question:** How can air agencies demonstrate that emissions from wildfires are "not reasonably controllable or preventable"?

Answer: According to the CAA and the Exceptional Events Rule, an exceptional event must be "not reasonably controllable or preventable." The preamble to the Exceptional Events Rule clarifies that the EPA interprets this requirement to contain two factors: the event must be both not reasonably controllable *and* not reasonably preventable at the time the event occurred. This requirement applies to both natural events and events caused by human activities. However, it is presumptively assumed that wildfires on wildland, as supported in a demonstration, will satisfy both factors of the "not reasonably controllable or preventable" element unless evidence in the record clearly demonstrates otherwise.

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In showing that a prescribed fire has developed into a wildfire, air agencies should include the following documentation in their demonstrations: (1) news reports or notifications to the public characterizing the nature of the fire; and (2) the demonstration submitters' explanation and other evidence documenting the origin and evolution of the fire.

The Exceptional Events Rule accepts that wildfire events on wildland are not generally reasonable to control or prevent. Therefore, a statement that the wildfire event was caused by one of the causes identified in the definition of wildfire (such as lightning) and occurred predominantly on wildland, and thus by the terms of the Exceptional Events Rule, was not reasonably controllable or preventable, should satisfy this rule element. A report based on information from other agencies or from news reports, possibly supplemented by maps of fire locations, may potentially be sufficient for this statement. The air agencies should work with their EPA Regional office to ensure that their statements about the causes of the wildfire events are sufficient.

B.10. Question: Can the EPA provide an example exceptional events demonstration for a wildfire that is claimed to have influenced downwind PM_{10} concentrations?

Answer: PM_{10} generally tends to "fall" to ground level relatively quickly in the vicinity of the event and, in our experience, is not usually subject to long-range transport. However, all demonstrations are evaluated case-by-case based on the weight of evidence and the EPA is open to evidence on this subject. Air agencies should contact their EPA Regional offices to discuss scientific evidence to support such a contention.

B.11. Question: Can an air agency submit and the EPA act on a demonstration for a wildfire or prescribed fire that does not occur on wildland?

Answer: Air agencies contemplating preparing fire-related exceptional events demonstrations for fires not on wildland should consult with the reviewing EPA Regional office. The EPA may choose to review such a demonstration on a case-by-case basis considering the specific merits of each event.

B.12. Question: Can a prescribed fire be an exceptional event?

The 2016 Exceptional Events Rule states that prescribed fire on wildland can be a human-caused event eligible for treatment as an exceptional event. As with any other type of event, a supporting demonstration for a prescribed fire event must include all required elements (see Question B.2 for information on the six required elements).

Questions B.13-B.17 provide additional information specific to prescribed fires about how to satisfy the "not reasonably controllable or preventable" and "human activity unlikely to recur at a particular location or a natural event" criteria.

The EPA intends to provide additional guidance in 2018 on developing exceptional events demonstrations for prescribed fire events that influence ozone concentrations.

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B.13. Question: How can a prescribed fire satisfy the "human activity unlikely to recur" criterion?

Answer: The Exceptional Events Rule recognizes that prescribed fires are intentionally ignited by land management actions. Since they are caused by human activity, to be considered an exceptional event, every prescribed fire must address the "human activity unlikely to recur" criterion. For prescribed fires, allowable recurrence under the Exceptional Events Rule may be based on either the natural fire return interval or the frequency needed to establish, restore, and/or maintain a sustainable and resilient wildland ecosystem (as documented in a land/resource management plan).

Successful assessments of an area's natural fire return interval typically include (1) a review of the number of years between successive naturally occurring fires for a given vegetation type and (2) a review showing that the actual frequency by which the prescribed fires were conducted matches the natural fire return interval. Multi-year land or resource management plans prepared by the land management agency or any private property owner generally include documentation of these established fire intervals, and can be used to identify the natural fire return interval in an exceptional events demonstration. While the EPA will generally defer to the interval described in these plans, the actual burn frequency is not required to match the described interval exactly to satisfy human activity unlikely to recur criterion. Based on the complexity of prescribed fire for sustainable land management, the EPA acknowledges that portions of natural ecosystems may have different natural fire return intervals, which may influence how a burn manager applies the prescribed fire.

Fire recurrence can also be addressed by identifying the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species. The EPA acknowledges that a multi-year plan with such a stated objective may include general targets for the frequency of prescribed fire use and that management may deviate from the general plan due to unexpected differences between planned and actual fire behavior, landscape or ecosystem characteristics, fuel loading patterns and weather patterns.

B.14. Question: How can a private landowner rely on a land/resource management plan to satisfy the "human activity unlikely to recur" criterion?

Answer: If private landowners want to rely on a land/resource management plan and burns on private land contribute to an exceedance or violation addressed in an exceptional events demonstration, then the "human activity unlikely to recur at a particular location" criterion can be addressed as follows:

The land management plan (either comprehensive land management plan that includes private lands or each individual land management plan) must include information on the fire return interval (that either mimics the natural fire return interval or the interval needed to create or maintain a sustainable ecosystem).

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B.15. Question: How can a prescribed fire satisfy the "not reasonably *controllable*" criterion?

Answer: The Exceptional Events Rule allows for exclusion of data affected by a prescribed fire if the usual requirements of the rule are satisfied and if the air agency has adopted and is implementing a Smoke Management Program (SMP) or if the air agency has ensured that the burner employed basic smoke management practices (BSMPs).

The preamble to the 2016 Exceptional Events Rule describes an SMP as establishing a basic framework of procedures and requirements for managing smoke from a prescribed fire managed for resource benefits. The preamble also identifies the following six recommended SMP elements: authorization to burn, minimizing air pollutant emissions, smoke management components of burn plans, public education and awareness, surveillance and enforcement, and program evaluation. SMPs must be state-certified, which means that a responsible state or delegated local agency has certified in a letter to the air agency's EPA Regional office that it has adopted and is implementing an SMP.

The *Report to Congress on Black Carbon* also states that BSMPs could "…include, among other practices, steps to minimize air pollutant emissions during and after the burn, evaluate dispersion conditions to minimize exposure of sensitive populations, and identify procedures to ensure that burners are using BSMPs."

Table 1 in the 2016 Exceptional Events Rule lists BSMPs, but this listing is not intended to be all-inclusive. Not all BSMP are appropriate for all burns. Goals for applicability should retain flexibility to allow for onsite variation and site-specific conditions that can be variable on the day of the burn. Burn managers can consider other appropriate BSMP as they become available due to technological advancement or programmatic refinement.

B.16. Question: How can a prescribed fire satisfy the "not reasonably *preventable*" criterion?

Answer: For prescribed fires, the not reasonably preventable criterion can be satisfied by a qualitative assessment of benefits that would have been foregone had the prescribed fire not been conducted.

To assess the benefits of a prescribed fire, an air agency may rely on and reference a multi-year land or resource management plan for a wildland area with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire provided that the Administrator determines that there is no compelling evidence to the contrary in the record and the use of prescribed fire in the area has not exceeded the frequency indicated in that plan.

B.17. Question: How can air agencies satisfy the "not reasonably controllable or preventable" criteria for prescribed fires on privately-owned lands?

Answer: For the not reasonably controllable criterion, an air agency submitting a demonstration would normally rely on BSMPs to address fires on privately-owned lands. The air agency would

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include evidence of the use of BSMP, such as the burn manager's affirmation of use supported by a copy of the post-burn report or a letter from the burn manager.

For the not reasonably preventable criterion, the air agency submitting the demonstration should explain how the prescribed fire is "not reasonably preventable" based on the benefits that would be foregone if the fire were not conducted. "Forgone benefits" would be those objectives in a multi-year fire/land management plan that establish, restore and/or maintain a sustainable and resilient wildland ecosystem. If a prescribed fire on private land contributes to the exceedance, then the comprehensive land management plan must either include private landowners, or private landowners must have a land management plan that addresses the above objectives.

B.18. Question: What is a post-burn report and when would it be used in an exceptional events demonstration?

Answer: If an exceedance or violation of a NAAQS occurs when a prescribed fire is employing an appropriate BSMP approach, the air agency and the burn manager should undertake a review of the subject fire, including a review of the BSMPs applied during the subject fire to ensure the protection of air quality and public health and progress towards restoring and/or maintaining a sustainable and resilient wildland ecosystem. If the prescribed fire becomes the subject of an exceptional events demonstration, documentation of the post-burn review must accompany the demonstration. Recommended elements that may be included in post-burn reports are listed in Table 4 of the 2016 Exceptional Events Rule preamble.

B.III. High Wind Dust Events

B.19. Question: What is a high wind threshold and how does the EPA apply high wind thresholds for high wind events?

Answer: For purposes of the Exceptional Events Rule, a high wind threshold is defined as the minimum threshold wind speed capable of causing particulate matter emissions from natural undisturbed lands in the area affected by a high wind dust event.

As indicated in the 2016 Exceptional Events Rule at 40 CFR 50.14(b)(5)(iii), "The Administrator will accept a high wind threshold of a sustained wind of 25 mph for areas in the States of Arizona, California, Colorado, Kansas, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming provided this value is not contradicted by evidence in the record at the time the State submits a demonstration." States can also identify and use an Administrator-approved alternate area-specific high wind threshold that is more representative of local or regional conditions, if appropriate.

B.20. Question: Does an air agency need to make an argument or submit evidence about control measures for air quality impacts from wind-blown dust from desert land in its natural state?

Answer: While generally impacts from wind-blown dust from undisturbed natural deserts are inherently not reasonable to control, the air agency would need to state that the wind-blown dust

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was from undisturbed natural deserts and provide appropriate supporting documentation in its demonstration. The supporting documentation could include descriptions of the geographic area (with maps or available visuals) and a discussion of historical land use, including prior disturbances, water diversions and other historical practices that may have occurred on the land, even if the land seems or is generally considered to be "undisturbed" at present.

Submitting agencies should also identify and evaluate controls for significant anthropogenic sources of event-related windblown dust. When addressing the "not reasonably controllable or preventable" criterion within an exceptional events demonstration for a high wind dust event, air agencies should: (1) identify the event-related natural and anthropogenic sources of emissions causing and contributing to the monitored exceedance or violation, including the contribution from local sources, (2) identify the relevant SIP, FIP or TIP or other enforceable control measures in place for these sources and the implementation status of these controls, and (3) provide evidence of effective implementation and enforcement of reasonable controls, if applicable. Special provisions for satisfying this criterion apply to large-scale and high-energy high wind dust events, as described in Question B.21.

B.21. Question: Does the Exceptional Events Rule have special provisions for certain "extreme" high wind dust events?

Answer: Yes, the 2016 Exceptional Events Rule added provisions for large-scale and high-energy high wind dust events, sometimes referred to as "haboobs", that allow for more streamlined documentation requirements to support the "not reasonably controllable" criterion than other high wind events.

Air agencies do not need to provide the case-specific justification described in Question B.20 to satisfy the "not reasonably controllable or preventable" criterion for large-scale and high-energy high wind dust events, such as "haboobs."

Instead, to satisfy the "not reasonably controllable or preventable" criterion for large-scale and high-energy high wind dust events, the demonstration must document that the event: 1) Was associated with a dust storm and is the focus of a Dust Storm Warning; 2) Had sustained winds that were greater than or equal to 40 mph; and 3) Had reduced visibility equal to or less than 0.5 miles.

To satisfy the visibility criterion, a demonstration for a large-scale high-energy high wind dust event should endeavor to include the best evidence available. Less precise photographic data or video documentation of visibility reduction could be considered on a case-by-case basis for this criterion in circumstances where precise visibility measurements are not available.

C. Public Comment Process

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C.1. Question: At what point in the exceptional events demonstration development and review process is public notice and opportunity for comment required?

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Answer: The Exceptional Events Rule requires that air agencies offer notice and opportunity for public comment as part of the demonstration development process (see 40 CFR 50.14(c)(3)(i) and 40 CFR 50.14(c)(3)(v)). The EPA encourages air agencies to work closely with their EPA Regional office throughout the development and submittal of the demonstration, including ensuring that air agencies provide sufficient opportunity for public comment.

C.2. Question: What process or mechanisms should an air agency use to ensure that an exceptional events demonstration has sufficient opportunity for public comment?

Answer: Providing sufficient opportunity for public comment for a demonstration is case-by-case and depends on the circumstances and intended audience. In particular, the EPA encourages air agencies to provide electronic notice, which provides an effective, convenient, and cost-efficient way to communicate information to the majority of the public (see, for example, the EPA's October 18, 2016, action related to e-notice for air permitting, available at https://www.epa.gov/nsr/clean-air-act-permitting-electronic-notice-final-rule).

In general, it may be sufficient for an air agency to post a draft demonstration on its website, provided the interested stakeholders are given a timely notification of the opportunity to review and comment on the demonstration. For example, notification of the availability of a demonstration for review can be accomplished through an email from the air agency to the air agency public electronic distribution list, announcing the posting of the draft demonstration for review and comment along with the web link to the draft demonstration document(s) and instructions for submitting comments to the air agency. The air agency should seek to ensure that interested stakeholders are aware of the posting, and should allow public comment for a period of at least 30 days.

D. EPA Review and Response

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D.1. Question: What is meant by a "weight-of-evidence" approach when reviewing exceptional events demonstrations?

Answer: In using the term "weight of evidence," the EPA and relevant air agency will consider all relevant evidence and qualitatively "weigh" this evidence based on its relevance to the Exceptional Events Rule criterion being addressed, the degree of certainty, its persuasiveness, and other considerations appropriate to the individual pollutant, as well as the nature and type of event.

D.2. Question: In general, how does an applicant know if a demonstration will have regulatory significance and ensure an EPA concurrence/nonconcurrence decision?

Answer: The 2016 Exceptional Events Rule applies to the following types of regulatory determinations by the Administrator, as specified in 50.14(a)(1)(i).

- An action to designate an area, pursuant to CAA section 107(d)(1), or redesignate an area, pursuant to CAA section 107(d)(3), for a particular NAAQS;

- The assignment or re-assignment of a classification category to a nonattainment area where such classification is based on a comparison of pollutant design values, calculated according to the specific data handling procedures in 40 CFR part 50 for each NAAQS, to the level of the relevant NAAQS;
- A determination regarding whether a nonattainment area has attained the level of the appropriate NAAQS by its specified deadline;
- A determination that an area has data for the specific NAAQS, which qualify the area for an attainment date extension under the CAA provisions for the applicable pollutant;
- A determination under CAA section 110(k)(5), if based on an area violating a national ambient air quality standard, that the state implementation plan (SIP) is inadequate under the requirements of CAA section 110; and
- Other actions on a case-by-case basis as determined by the Administrator.

In general, if a demonstration does not affect one these specific regulatory determinations, it is considered to not have "regulatory significance," and EPA Regional offices may defer action on the demonstration or recommend another existing mechanism for addressing the air agency's concern (e.g., "alternate path" for data exclusion). Please consult with your EPA Regional offices if you have additional questions on regulatory significance.

The 2016 Exceptional Events Rule's initial notification requirement is intended to begin a process of communication and consultation between air agencies and the EPA Regional offices to determine the regulatory implications of a potential demonstration for a specific event. Stakeholders are also encouraged to review the rule and preamble information and contact the appropriate EPA Regional office with questions about the potential regulatory significance of a suspected event.

D.3. **Question:** How quickly will the EPA review the demonstration document and provide the air agency with feedback or a decision?

Answer: The Exceptional Events Rule preamble identifies the following intended response timelines for the EPA: a formal response to the initial notification within 60 days; initial review of an exceptional events demonstration with regulatory significance within 120 days of receipt; a decision regarding event concurrence/ within 12 months of receipt of a complete demonstration; and a "deferral letter" within 60 days of receipt of a demonstration that the EPA determined during the initial notification process to not to have regulatory significance.

Air agencies that believe their demonstrations are tied to near-term regulatory actions should discuss this with the EPA Regional office and work collaboratively on identifying an appropriate and timely review schedule. In addition, air agencies may wish to submit their demonstration packages well in advance of the regulatory deadline. Air agencies should also identify the relationship between the exceptional event-related flagged data and the anticipated regulatory action as part of their initial notification to the reviewing EPA Regional office.

D.4. **Question:** How does the EPA publicly communicate its decisions and supporting rationale on exceptional events demonstrations?

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Answer: In consultation with relevant air agencies, the EPA posts example demonstration packages and decisions (consisting of air agency demonstration submittals, EPA responses, and EPA technical support documents) on the EPA Regional office websites and/or the EPA's Air Quality Analysis website.[5] In most instances, the EPA's concurrence or nonconcurrence determination may be a factor in a rulemaking that includes a public comment period. In these cases, documents related to the relevant exceptional events demonstration and any official supporting correspondence will also be posted in the associated rulemaking docket.

E. Rule Application and Implementation Issues

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E.1. Question: From which types of calculations will affected data be excluded when the EPA concurs on an exceptional events demonstration?

Answer: When the EPA concurs based on the weight of evidence that the air agency has successfully made the demonstrations referred to in 40 CFR 50.14(a)(2) and (b)(1), the EPA generally will exclude the affected data from the following types of calculations and activities:

- The EPA's AQS will not include these days in user reports or in design values estimates if the "exclude events" report option is chosen when the report is run.[6]
- The data will continue to be publicly available, but the EPA's publications and public information statements on the status of air quality in the affected area generally will not reflect these data in any summary statistic of potential regulatory application, unless such inclusion is specifically noted.[7]

In addition, some proposed regulatory actions (*e.g.*, proposed designation, classification, attainment demonstration, or finding as to whether the area has met the applicable NAAQS) will rely on design values that exclude data that was approved for exclusion in a concurred demonstration. These regulatory actions require the EPA to provide an opportunity for public comment prior to taking final action. If the EPA pursues one of these actions for a given area, the EPA will open a new comment period during which the public may comment on the exceptional event submission and/or the EPA's determinations. The EPA must consider and respond to received comments before taking final regulatory action.

E.2. Question: How does the EPA handle data exclusions for exceptional events in the case of 1-hour values of the 24-hour $PM_{2.5}$ or PM_{10} 24-hour NAAQS?

Answer: When the EPA concurs on an exceptional event affecting the 24-hour $PM_{2.5}$ or PM_{10} 24-hour NAAQS, the EPA intends to exclude all 24 1-hour values within a given event-affected

[5] https://www.epa.gov/air-quality-analysis/treatment-data-influenced-exceptional-events
[6] Due to the complexity of the AQS software, inadvertent errors may occur. The EPA asks that agencies provide the EPA with information if/when AQS outputs seem inconsistent with the EPA's intention to exclude concurred upon data.
[7] These data may be included in statistics intended to describe current status and trends in actual air quality in the area for public information purposes including reporting of the Air Quality Index.

day for $PM_{2.5}$ and PM_{10} data obtained via monitor instruments that provide 1-hour measurements.

E.3. Question: Can droughts be considered exceptional events?

Answer: Meteorological events involving high temperatures or drought conditions do not directly cause pollutant emissions and are therefore not considered exceptional events. However, events involving high temperatures or lack of precipitation may promote occurrences of particular types of exceptional events, such as wildfires or high wind events, which do directly cause emissions.

E.4. Question: It is possible for events to affect more than one state. Would the EPA accept a jointly developed multi-state/agency demonstration?

Answer: The primary responsibility for developing demonstrations lies with state, local, and tribal air agencies. The EPA encourages air agencies to coordinate and cooperate with each other in compiling demonstration packages when a single event affects multiple jurisdictions. Each NAAQS exceedance or violation, however, will likely have some unique properties (*e.g.*, unique monitoring locations, different surrounding and potentially contributing sources with varying levels of control, different historical concentration patterns, *etc.*). States/agencies will need to address these unique characteristics individually, but may coordinate with other air agencies similarly affected by the same event. Air agency collaboration can range from informal information-sharing to a closely coordinated joint demonstration to be submitted separately by each participating air agency. Additional information on coordinating preparation of demonstrations for events that affect more than one air agency jurisdiction can be found in the EPA document, *Best Practices for Preparation of Multi-State/Local Air Agency Exceptional Events Demonstrations*, located at:

https://www.epa.gov/air-quality-analysis/exceptional-events-implementation-tools-templates-and-links

E.4. Question: How should air agencies define and support a "particular location" in the context of a claim that an event was "human activity unlikely to recur at a particular location?"

Answer: How a "particular location" is characterized in this context can vary depending on the specifics of the area. Air agencies and EPA Regional offices should proactively discuss what "particular location" means during the initial notification process before a demonstration is prepared. A "particular location" will most commonly be defined by jurisdictional boundaries (*e.g.*, a county) or an air quality control region, but definitions may vary based on local topography, jurisdiction sizes, air movement patterns, and other considerations.

With regard to the concept of recurrence, and as stated in the preamble of the Exceptional Events Rule, we generally measure the 3-year period backwards from the date of the most recent event (*e.g.*, for an event occurring on May 1, 2016, the 3-year period would be May 1, 2013, through May 1, 2016). As described previously, if there have been two prior events caused by human

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activity of a similar type (*i.e.*, a similar event type generating emissions of the same pollutant whether flagged and/or the subject of a demonstration) within a 3-year period in ''a particular location,'' the third event, for which the demonstration is being prepared (or would be prepared), would generally not satisfy the ''human activity that is unlikely to recur at a particular location'' criterion and, thus, would not qualify as an exceptional event.

E.5. **Question:** How should an air agency handle a situation in which an exceptional event influences concentrations at a regulatory monitor that is operated by a federal land manager or other federal agency?

Answer: Air agencies may submit demonstrations for any regulatory monitor within its jurisdictional bounds, including those operated by federal land managers, other federal agencies, and delegated local agencies. To maintain data integrity, AQS is generally designed so that only the agency updating a monitoring site may enter or alter data for that site. Under normal circumstances, an air agency will not have access rights to apply event flags to data from monitors operated by other entities, such as a federal land manager. When an air agency believes that an exceptional event affected the concentration recorded by monitors operated by other agencies, the air agency should contact the agency operating the monitor and request that the operating agency flag the identified data range for exclusion. The affected air agency should also develop and forward to the operating agency an initial event description that the operating agency can enter in AQS along with the associated "R" series flags (see Question A.3). If an air agency is unsuccessful in requesting that another agency apply the appropriate "R" series flags and initial event description, the air agency should contact its EPA Regional office.

A federal land manager or other federal agency may initiate a request for data exclusion, but only after the air agency in which the affected monitor is located concurs with the federal land manager's or other federal agency's submittal.

E.6. **Question:** Can fireworks displays cause PM_{10} exceedances/violations?

Answer: All demonstrations are evaluated case-by case based on the weight of evidence. Although the EPA has not seen definitive scientific evidence that fireworks are likely to cause PM_{10} exceedances at a monitor, the EPA is open to reviewing new evidence on this subject.

E.7. **Question:** The limited maintenance plan requirements for PM_{10} require a demonstration that the area design value is less than or equal to 98 $\mu g/m^3$. Flagging values between 98 $\mu g/m^3$ and the NAAQS is therefore relevant for this regulatory decision. Can air agencies flag and request/receive the EPA's concurrence on these values, which are not exceedances and do not contribute to violations?

Answer: Yes. A May 7, 2009, memorandum from William T. Harnett to Regional Air Division Directors states the following regarding the PM_{10} limited maintenance plan option: "In determining eligibility for the limited maintenance plan option, the EPA will treat 24-hour average air quality data between 98 $\mu g/m^3$ and 155 $\mu g/m^3$ in a manner analogous to the treatment of exceedance data under the Exceptional Events Rule, provided the impacted data meet the general definition and criteria for exceptional events (natural event, or exceptional event that is

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not reasonable controllable or expected to recur)." This memorandum is posted on EPA's website at:

https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/20090507_harnett_lmp_pm10_update_exc_event.pdf

E.8. Question: In addressing the not reasonably controllable criterion, what kind of deference is given to control measures in State Implementation Plans (SIPs)?

Answer: Deference is given to measures in a nonattainment or maintenance SIP, TIP, or FIP approved within 5 years of the date of the event. The measures must address the event-related pollutant for all appropriate sources to qualify for consideration that the requirements of the SIP, TIP, or FIP are reasonable controls (with respect to all anthropogenic sources that have or may have contributed to the exceedance or violation.) This deference does not apply if the air agency is under obligation to revise the relevant SIP/TIP.

When addressing the "not reasonably controllable or preventable" criterion within an exceptional events demonstration, air agencies should: 1) identify the natural and anthropogenic sources of emissions causing and contributing to the monitored exceedance or violation, including the contribution from local sources, 2) identify the relevant SIP, FIP or TIP or other enforceable control measures in place for these sources and the implementation status of these controls, and 3) provide evidence of effective implementation and enforcement of reasonable controls, if applicable.

E.9. Question: Can measures either in an approved SIP/TIP or FIP outside of the five-year period or measures not in an approved SIP/TIP or FIP be considered in addressing the not reasonably controllable criterion?

Answer: Yes. Such measures may be presented in a demonstration and evaluated as part of the weight of evidence on reasonable controls, but such measures are not given the deference described above in question E.8.

E.10. Question: Does a state (or tribe) need to make an argument or submit evidence about control measures for events that took place in other states or countries, on federally-owned and managed land, or on state (or tribal) lands not subject to state (or tribal) regulation?

Answer: Under the Exceptional Events Rule, air agencies generally have no obligation to specifically address controls if the event was due to emissions originating outside their jurisdictional (*i.e.*, state or tribal) border. It is generally not reasonable to expect the downwind state (*i.e.*, the state submitting the demonstration) to require the upwind country or state to have implemented controls on sources sufficient to limit event-related air concentrations in the downwind state. However, a demonstration based on emissions originating outside of the submitting air agency's jurisdictional borders must demonstrate that the event also meets the other exceptional events criteria.

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In the case of a federal land manager or other federal agency submitting a demonstration under the requirements of this section, the jurisdictional boundaries that apply are those of the state or the tribe depending on which has jurisdiction over the area where the event has occurred. States and tribes should consult with their EPA Regional office early in the development of an exceptional events demonstration package if they believe that emissions from sources on federally-owned and managed land (*e.g.*, national parks within the state) have been affected by an event in a way that raises issues about reasonable control.

As with all exceptional events demonstrations, the EPA will evaluate the information on a case-by-case basis based on the facts of a particular exceptional event. The EPA encourages air agencies to work cooperatively to plan and apply controls on both sides of jurisdictional boundaries for their mutual benefit.

E.11. Question: Does the Exceptional Events Rule contain a dispute resolution process that air agencies can use to resolve disagreements regarding EPA decisions on demonstrations?

Answer: There are several mechanisms for resolving disagreements that air agencies can use at various points in the exceptional events or subsequent regulatory determination process:

- Engage in early dialogue with the appropriate EPA Regional office.
- Submit requests for reconsideration to the official who made the determination if a request identifies a clear error or if information submitted by the agency was overlooked.
- Participate in the public notice and comment process for the regulatory determination affected by EPA nonconcurrence on the demonstration.
- Challenge the regulatory decision made based on the EPA's exceptional event disapproval in an appropriate court.

For complex exceptional events claims or those with immediate regulatory or other impacts (*e.g.*, those claims that directly influence proposed designation or redesignation, classification, and attainment determinations), EPA Regional office staff may also seek input from other EPA Regional offices and/or EPA headquarters staff.

E.12. Question: Can air agencies use data from non-regulatory monitors in exceptional events analyses?

Answer: Yes, air agencies can use data from non-regulatory monitors to support their exceptional events demonstrations. Generally, monitoring data used for NAAQS regulatory purposes are collected from Federal Reference Method (FRM), Federal Equivalent Method (FEM), and/or Approved Regional Method (ARM) monitors that are sited and operated in accordance with 40 CFR Part 58. Exceedances or violations identified as exceptional events originate from these same data from FRM, FEM, and/or ARM monitors. The EPA's repository of ambient air quality data, AQS, stores data from more than 10,000 monitors, about 5,000 of which are currently active. Although not all of these monitors are FRM/FEM/ARM-approved, data from non-FRM/FEM/ARM monitors can be used in exceptional events analyses. For example, air quality data summaries from non-FRM/FEM/ARM monitors may be helpful in defining the duration and geographic extent of the event, including the area of exceedance/violation and the

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area containing sources that contribute to exceedances/violations. Similarly, chemical speciation data from monitor samples can help characterize the nature of the violation and identify contributing emissions sources.

F. Mitigation Plans

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F.1. Question: What is the purpose of mitigation plans under the Exceptional Events Rule?

Answer: Section 319(b)(3)(A) of the CAA identifies five principles that the EPA must follow in developing implementing regulations for exceptional events:

(i) Protection of public health is the highest priority;
(ii) Timely information should be provided to the public in any case in which the air quality is unhealthy;
(iii) All ambient air quality data should be included in a timely manner in an appropriate federal air quality database that is accessible to the public;
(iv) Each state must take necessary measures to safeguard public health regardless of the source of the air pollution; and
(v) Air quality data should be carefully screened to ensure that events not likely to recur are represented accurately in all monitoring data and analyses.

The EPA finalized revisions to the Exceptional Events Rule, which governs the exclusion of event-influenced air quality data, on September 30, 2016 (codified at 40 CFR 50.1, 50.14, and 51.930). Pursuant to the rule revisions, areas with historically documented or known seasonal events are subject to the development of mitigation plans. With the overarching goal of protecting public health, mitigation plan requirements (40 CFR 51.930) contain elements of (i), (ii), and (iv) that meet statutory requirements in section 319(b)(3)(A) of the CAA. More generally, the purpose of mitigation plans under the Exceptional Events Rule (40 CFR 51.930) is to ensure that air agencies take appropriate and reasonable actions to protect public health from exceedances or violations of the national ambient air quality standards.

The EPA also recognizes air agencies will generally be unable to prevent or "mitigate" the occurrence of a natural event, which is why the primary objective of mitigation plans under the Exceptional Events Rule is to minimize negative event-associated impacts on public health. The six required components for mitigation plans (see Question F.2) were developed with that objective in mind. The EPA will be reviewing mitigation plans to ensure the requisite elements are included in the plan, and that the appropriate public comment process was followed as part of its development process.

Additional information on mitigation plan components and the submission process can be found in 40 CFR §51.930 of the Exceptional Events Rule.

F.2. Question: What are the required components of a mitigation plan?

Answer: At a minimum, each mitigation plan developed shall contain the following:

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a. Public notification and education programs for affected or potentially affected communities.
b. Steps to identify, study, and implement mitigating measures, including:
    i. measures to abate or minimize contributing controllable sources;
    ii. methods to minimize public exposure to high concentrations of identified pollutants;
    iii. processes to collect and maintain data pertinent to the event; and
    iv. mechanisms to consult with other air quality managers in the affected area with regards to appropriate responses to abate and minimize impacts.
c. Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State and all interested stakeholders.

EPA Regional offices will review mitigation plans only for completeness (*i.e.*, inclusion of the required components above) rather than detailed review and approval. The EPA therefore encourages air agencies to leverage and incorporate by reference the applicable content of existing documents when developing mitigation plans for exceptional events (see Question F.5).

If possible, air agencies should notify the public of the actual or anticipated event at least 48 hours in advance. Outreach mechanisms include web site alerts, National Weather Service alerts, telephone or text bulletins, and television or radio campaigns or other messaging campaigns. Public notification and education may include adoption of methods for forecasting/detection, consultation with appropriate health department personnel regarding health advisories and recommended actions to reduce exposure. More information on the required components can be found in 40 CFR 51.930(b)(2), and a Mitigation Plan Checklist designed to facilitate the development of a mitigation plan can be found – along with other implementation tools – on EPA's website for Exceptional Events at:

https://www.epa.gov/air-quality-analysis/exceptional-events-implementation-tools-templates-and-links.

F.3. Question: How will an air agency know if it is required to develop and submit a mitigation plan?

Answer: In general, if an area is impacted by the same type of event for the same pollutant over three consecutive years or for three seasons over a three-year period, development and submission of a mitigation plan is required. Table 6 in the preamble to the 2016 Exceptional Events Rule provided the initial list of areas that met the aforementioned criteria for event recurrence, and for which mitigation plans are required. Mitigation plans are specific to area, pollutant, and event type. The EPA is developing a process to identify which areas may be subject to mitigation plan requirements in the future. The EPA will share this process with air agencies once developed, and future notifications based on the established process for required mitigation plans will come from the EPA Regional offices when the EPA becomes aware of an air agency's obligation to develop such plans.

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F.4. Question: Are the mitigation plan components reviewed each time a demonstration is submitted?

Answer: No. The appropriate EPA Regional office will review each mitigation plan developed once it is submitted, and notify the submitting air agency upon completion of such review and completeness determination, not a review of the plan content. The EPA intends for mitigation plans to be a low level of effort for air agencies, in that air agencies can rely upon and point to mitigation-related documents to satisfy mitigation plan requirements for exceptional events (see Question F.5).

F.5. Question: What if an area already has a plan for public notification or other components required in a mitigation plan?

Answer: The EPA recognizes that required mitigation plan components may be satisfied by preexisting air agency documents with potentially applicable provisions such as High Wind Action Plans, Emergency Episode Action Plans, and Smoke Management Programs. The EPA therefore encourages air agencies to leverage and incorporate by reference the applicable content of existing documents when developing mitigation plans for exceptional events.

F.6. Question: Can the type of flag in AQS impact whether a mitigation plan is required?

Answer: Yes. EPA views event request data exclusion flags, or "R" flags, as documentation from an air agency that, in its view, an event and its associated emissions contributed to an exceedance or violation at the monitor for the relevant pollutant and area. Flagging data with an "R" flag is part of the initial notification of intent to submit a demonstration and request exclusions of measured exceedances of a NAAQS for a potential exceptional event (40 CFR 50.14(c)(2)(i)).

In general, if an area is impacted by the same type of event for the same pollutant over three consecutive years or three event seasons over a three-year period, a mitigation plan must be developed and submitted. EPA would not count an "R" flag toward the aforementioned three-year event totals if the air agency submitted a demonstration for that area and pollutant and the EPA nonconcurred on that demonstration.

The EPA suggests air agencies use informational "I" flags in cases where the relevant data may have been influenced by an event, but has not been determined by an air agency to merit an exceptional events demonstration. <u>Informational flags, or "I" flags, will not count toward the determination of mitigation plan requirements.</u> Furthermore, the 2016 Exceptional Events Rule revisions eliminated the general schedule deadlines for flagging events for data exclusion, so air agencies no longer need to submit "R" flags to ensure the ability to submit a future exceptional events demonstration.

F.7. Question: What happens if an area is subject to the requirements of a mitigation plan, but submits an exceptional event demonstration without having developed an approved mitigation plan?

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Answer: Air agencies with identified areas shall submit mitigation plans to the applicable EPA Regional Administrator within 2 years of notification of this requirement. After this initial 2-year timeframe, even if a demonstration otherwise satisfies the Exceptional Events Rule criteria, the EPA will not concur with an air agency's request to exclude data that have been influenced by an event of the type that is the subject of a required mitigation plan until a mitigation plan for the relevant area has been approved. The EPA could, however, either nonconcur or defer action on a demonstration for such event-influenced data.

In accordance with the five principles of CAA Section 319(b)(3)(A), the purpose of mitigation plans under the Exceptional Events Rule is to protect public health, through public notification, minimization of exposure, and relevant source mitigation measures. If areas are subject to the requirements of a mitigation plan, but do not have an approved mitigation plan, then public health is at risk of not being adequately protected, and data influenced by exceptional events shall not be concurred upon for regulatory purposes.

Once an agency has submitted a mitigation plan, EPA will review each submitted plan and verify that it includes the required elements. Within 60 days of receipt of such a plan, the EPA intends to notify the submitting air agency that it has reviewed the mitigation plan and either verified that it contains the required elements or identified any missing elements.

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