

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Parts 51 and 58****[EPA-HQ -OAR-2007-0195; FRL-]****RIN 2060-AO11****Air Quality Index Reporting and Significant Harm Level for Fine Particulate Matter**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: In accordance with section 319 of the Clean Air Act (CAA), EPA proposes to change the uniform air quality index used by States for daily air quality reporting to the general public by revising the sub-index for fine particles less than or equal to 2.5 micrometers (μm) in diameter ($\text{PM}_{2.5}$). Proposed changes include setting an Air Quality Index (AQI) value of 100 equal to the concentration of the daily $\text{PM}_{2.5}$ national ambient air quality standard (NAAQS) ($35 \mu\text{g}/\text{m}^3$, 24-hour average) and adjusting the $\text{PM}_{2.5}$ concentration associated with an AQI value of 150 to $55 \mu\text{g}/\text{m}^3$, 24-hour average. EPA proposes to retain the current AQI value of 500 which is set at a level of $500 \mu\text{g}/\text{m}^3$, 24-hour average, and to retain the existing AQI values of 200, 300, and 400 at $\text{PM}_{2.5}$ concentrations that are approximately equidistant between the concentrations associated with AQI values of 150 and 500. In accordance with section 303 of the CAA, EPA proposes to set a Significant Harm Level (SHL) for $\text{PM}_{2.5}$ equal to the AQI value of 500.

DATES: Comments on this proposed rule must be received by **[insert date 60 days after date of publication in the Federal Register]**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2007-0195, by one of the following methods:

- www.regulations.gov: Follow the on-line instructions for submitting comments.

- Email: a-and-r-Docket@epa.gov
- Fax: 202-566-9744.
- Mail: Docket No. EPA-HQ-OAR-2007-0195, Environmental Protection Agency, Mailcode 6102T, 1200 Pennsylvania Ave., NW., Washington, DC 20460. Please include a total of 2 copies.
- Hand Delivery: Docket No. EPA-HQ-OAR-2007-0195. Environmental Protection Agency, EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA-HQ-OAR-2007-0195. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through www.regulations.gov your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification,

EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit the EPA Docket Center homepage at <http://www.epa.gov/epahome/dockets.htm>.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in www.regulations.gov or in hard copy at the Air and Radiation Docket and Information Center, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket and Information Center is (202) 566-1742.

Public hearing: The Agency will hold a public hearing on these proposed changes March 5, 2009 in conjunction with the 2009 National Air Quality Conference being held in Addison, Texas.

The hearing will be held at the following location:

InterContinental Dallas, 15201 Dallas Parkway, Addison, Texas 75001, telephone (972) 386-6000. The hearing will be held on the Ballroom Level.

Written comments on this proposed rule may also be submitted to EPA electronically, by mail, by facsimile, or through hand delivery/courier. Please refer to the ADDRESSES and

SUPPLEMENTARY INFORMATION sections of this notice of proposed rulemaking for instructions for submitting written comments.

The public hearing will provide interested parties the opportunity to present data, views, or arguments concerning the proposed rule. EPA may ask clarifying questions during the oral presentations, but will not respond to the presentations at that time. Written statements and supporting information submitted during the comment period will be considered with the same weight as any oral comments and supporting information presented at the public hearing. Written comments must be received by the last day of the comment period, as specified in the proposal.

The public hearing will begin at 1:00 p.m. and continue until 5:00 p.m. with a dinner break from 5:00 p.m. until 6:00 p.m. The hearing will resume at 6:00 p.m. and continue until 8:00 p.m. EPA will make every effort to accommodate all speakers that arrive and register before 8:00 p.m.

If you would like to present oral testimony at the hearing, please notify Ms. Tricia Crabtree (C504-02), U.S. EPA, Research Triangle Park, NC 27711. The preferred method for registering is by e-mail (crabtree.tricia@epa.gov). Ms. Crabtree may be reached by telephone at (919) 541-5688. She will arrange a general time slot for you to speak. EPA will make every effort to follow the schedule as closely as possible on the day of the hearing.

Oral testimony will be limited to five (5) minutes for each commenter to address the proposal. We will not be providing equipment for commenters to show overhead slides or make computerized slide presentations unless we receive special requests in advance. Commenters should notify Ms. Crabtree if they will need specific audiovisual (AV) equipment. Commenters should also notify Ms. Crabtree if they need specific translation services for non-English

speaking commenters. EPA encourages commenters to provide written versions of their oral testimonies either electronically on computer disk or CD ROM or in paper copy.

The hearing schedule, including lists of speakers, will be posted on EPA's PM website for the proposal prior to the hearings, at: <http://www.epa.gov/pm/actions.html> A verbatim transcript of the hearing and written statements will be included in the rulemaking docket.

Blog: To provide an additional avenue for public discussion of this proposed rule, EPA will host a blog about the AQI and the proposed changes. Readers will be able to post comments to the blog and share their viewpoints and ideas with each other relating to the proposed rule. While comments posted to the blog will not be considered part of the official record on this rule, the blog will provide readers a means for easily submitting their comments for the record. EPA anticipates the blog will be live from March 2-11, 2009, to coincide with the public hearing on this proposal. EPA will announce the location of the AQI blog via the Agency's Greenversations blog at <http://blog.epa.gov/blog/>, and on the AirNOW Web site at www.airnow.gov.

FOR FURTHER INFORMATION CONTACT: Ms. Susan Lyon Stone, Human Studies Division, Office of Research and Development, Environmental Protection Agency, Mail code C58B, Research Triangle Park, NC 27711; telephone number: 919-966-6226; fax number: 919-966-6367; email address: stone.susan@epa.gov.

SUPPLEMENTARY INFORMATION:

General Information

What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through www.regulations.gov or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to EPA, mark the outside of

the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for Preparing Your Comments.* When submitting comments, remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, Federal Register date and page number).
- Follow directions – The Agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns, and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

Availability of Related Information

A number of documents relevant to this rulemaking are available on EPA web sites. The U.S. EPA Air Quality Criteria for Particulate Matter (October 2004), U.S. Environmental

Protection Agency, Washington, DC, EPA 600/P-99/002aF-bF, is available on EPA's National Center for Environmental Assessment web site. To obtain this document, go to <http://www.epa.gov/ncea>, and click on Particulate Matter. The Staff Paper, human exposure and health risk assessments, vegetation exposure and impact assessment, and other related technical documents are available on EPA's Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN) web site. The Staff Paper is available at: http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_pr_sp.html and the exposure and risk assessments and other related technical documents are available at: http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_pr_td.html. These and other related documents are also available for inspection and copying in the EPA docket identified above.

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I. Background

A. What are the Legislative Requirements?

Section 319 of the CAA requires EPA to establish a uniform air quality index for reporting of air quality. This section specifically directs the Administrator to “promulgate regulations establishing an air quality monitoring system throughout the United States which utilizes uniform air quality monitoring criteria and methodology and measures such air quality according to a uniform air quality index” and “provides for daily analysis and reporting of air quality based upon such uniform air quality index* * *”, CAA section 319 (a) (1) and (3). In 1979, EPA established requirements for index reporting (44 FR 27598). The requirement for State and local agencies to report the AQI appears in 40 CFR 58.50, and the specific requirements (e.g., what to report, how to report, reporting frequency, calculations) are in appendix G to 40 CFR part 58.

Section 303 of the Clean Air Act authorizes the Administrator to take certain emergency actions if pollution levels in an area constitute “an imminent and substantial endangerment to public health or welfare, or the environment.” Section 110(a)(2)(G) of the Clean Air Act requires that State implementation plans must provide for the authority comparable to that in section 303, and must include adequate contingency plans to implement such authority. Pursuant to these provisions, EPA promulgated 40 CFR 51.16 (36 FR 24002, November 21, 1971), which established "significant harm levels" for five criteria pollutants - sulfur dioxide (SO₂), inhalable

particulate matter (PM₁₀), nitrogen dioxide(NO₂), carbon monoxide (CO), and ozone (O₃). Part 51.16 was eventually restructured as subpart H and appendix L of part 51 (51 FR 40668, November 7, 1986).

B. What is the History of the Air Quality Index?

In 1976, we established a nationally uniform air quality index, then called the Pollutant Standard Index (PSI), for use by State and local agencies on a voluntary basis (41 FR 37660). This uniform index was designed to send a clear and consistent message to the public by providing nationally uniform information on air quality; be keyed to the NAAQS (for each criteria pollutant except lead) and provide a basis for accommodating changes to the NAAQS, which have a scientific basis relating air quality and public health; be linked to the SHL; be simple and easily understood by the public; and be used to make forecasts of future air quality.

The PSI included sub-indices for O₃, PM₁₀, CO, SO₂, and NO₂, which relate ambient pollutant concentrations to index values on a scale from 0 through 500. This represents a very broad range of air quality, from pristine air to air pollution levels that present imminent and substantial endangerment to the public. The index is normalized across pollutants by defining an index value of 100 as the numerical level of the primary short-term (e.g., daily or hourly) NAAQS for each pollutant and an index value of 500 usually corresponds to the SHL.¹ Such index values serve to divide the index into categories, with each category being identified by a simple informative descriptor. The descriptors are intended to convey information to the public about how air quality within each category relates to public health, with increasing public health concerns being conveyed as the categories range to the upper end of the scale.

¹ Below an index value of 100, an intermediate value of 50 was defined either as the level of the annual standard if an annual standard has been established (for PM_{2.5}, PM₁₀, and SO₂), or as a concentration equal to one-half the value of the short-term standard used to define an index value of 100 (CO).

In August 1999, EPA adopted revisions to the air quality index (64 FR 42530, August 4, 1999) and renamed the index the AQI. These changes included the addition of the following elements: a new category described as “unhealthy for sensitive groups;” new breakpoints for the O₃ sub-index in terms of 8-hour average O₃ concentrations, consistent with the 1997 revisions to the O₃ NAAQS; a new sub-index for PM_{2.5}; consistent with the revision to the PM NAAQS that establish new PM_{2.5} standards; and conforming changes to the sub-indices for PM₁₀, CO, and SO₂. These changes also included two new reporting requirements, first, to report a pollutant-specific sensitive group statement when the index is above 100, and second, to use specific colors if the index is reported in a color format.

Since the 1999 revisions, reporting of the Air Quality Index by State and local agencies has experienced significant growth. The increased reporting created an opportunity to begin displaying the AQI as contours on a map. The mapping began as a regional effort by states in the Northeast but eventually grew into national map coverage provided by the EPA’s AIRNow program. In addition to expanding AQI map coverage, the AIRNow program began receiving an increasing number of AQI forecasts from State and local agencies. What began as five cities in 1997 is now more than 300 cities across the United States submitting AQI forecasts to AIRNow. Air Quality Index forecasts are carried by the national media as well, for example USA Today and The Weather Channel. As forecasting has grown so has the AQI’s involvement with other federal agencies. The National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration both partner with the AIRNow program to build scientific tools to assist in reporting and forecasting the AQI. In addition, NOAA and EPA work jointly on Air Quality Awareness Week, an annual event at the beginning of May to promote the importance of the AQI in protecting public health. The AQI is also recognized internationally as

a proven tool to effectively communicate air quality information to the public. In fact, many countries have created similar indices based on the AQI.

C. *What Programs are Related to the Air Quality Index?*

Historically, State and local agencies have primarily used the AQI to provide general information to the public about air quality and its relationship to public health. For more than a decade, many States and local agencies, as well as EPA and other Federal agencies, have been developing new and innovative programs and initiatives to provide more information to the public, in a more timely way. These initiatives, including air quality forecasting, real-time data reporting through the AIRNow Website, and air quality action day programs, can serve to provide useful, up-to-date, and timely information to the public about air pollution and its effects. Such information will help individuals take actions to avoid or to reduce exposures to ambient pollution at levels of concern to them and can encourage the public to take actions that will reduce air pollution on days when levels are projected to be at levels of concern to local communities. Thus, these programs have significantly broadened the ways in which State and local agencies can meet the nationally uniform AQI reporting requirements, and are contributing to State and local efforts to provide community health protection and to attain or maintain compliance with the NAAQS. EPA, State and local agencies recognize that these programs are interrelated with AQI reporting and with the information on the effects of air pollution on public health that is generated through the periodic review, and revision when appropriate, of the NAAQS.

The most recent NAAQS revisions, information on air quality action day programs and the SHL and emergency episode criteria are discussed briefly below. In light of the interrelationships among these programs, we have developed the revisions to the PM_{2.5} sub-index

of the AQI being proposed today with the goal of establishing an AQI sub-index for PM_{2.5} that can effectively serve as a nationally uniform link across these programs. In so doing, we intend to support and encourage State and local participation in air quality forecasting and real-time data reporting initiatives and the development and implementation of air quality action programs that serve public education and health protection goals.

1. PM_{2.5} NAAQS

In October 2006, EPA revised the national ambient air quality standards for PM_{2.5} by strengthening the 24-hour standard to protect public health against effects associated with short-term exposure to PM_{2.5} (71 FR 61144, October 17, 2006). These effects include: premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions and emergency department visits), changes in lung function and increased respiratory symptoms, as well as new evidence for more subtle indicators of cardiovascular health. *Id.* at 61152. The changes to the AQI we are proposing today are based on this revision to the PM_{2.5} NAAQS. The proposed conforming changes to the AQI would establish the relationship between an index value of 100 and the level of the 24-hour PM_{2.5} NAAQS, and would also establish the relationships between ambient concentrations of this pollutant and index values across the full scale of index values from 0 to 500.

2. Air Quality Action Day Programs

The implementation of air quality action day programs (also referred to as community action programs) has become widespread in metropolitan areas across the country as an important component of the overall approach to reduce emissions of precursors and direct emissions of PM. Motivation for implementation of this type of program often stems from local government and business concerns about the NAAQS attainment status of the area and the

restrictions, additional controls, and costs associated with being classified as a nonattainment area. Many areas are also motivated by public health concerns and believe that increasing the amount of air quality information available to sensitive populations raises awareness and results in significant health benefits. Specific goals which are usually associated with air quality action day programs include: (1) Educate the public and enhance protection of public health through reduced exposure to higher levels of air pollution; (2) attain or maintain NAAQS attainment status and the associated economic benefits; (3) meet specific emission reduction targets; and (4) manage/reduce traffic congestion.

Air quality action day programs are usually voluntary and generally provide multiple steps that the public, business, and industry can take to reduce emissions when higher levels of air pollution are forecast to occur, including measures such as trip reduction, use of public transportation, and postponement of certain activities such as vehicle refueling and lawn mowing. The programs emphasize educating the public about the basics of air pollution and the impact of individual activities on local air quality. The educational component of these programs also helps to create a strong link between environmental goals and associated public health benefits. Most of these programs are based on the categories of the AQI and make use of the AQI descriptors, colors, and related health effects and cautionary statements on action days. By linking action days to the AQI, local control programs hope to alter individual behavior to reduce emissions and to reduce population exposures to air pollution.

In addition to reduced pollutant exposure of the general population due to improved air quality, there are other health benefits directly associated with air quality action day programs that can be enhanced by linkage to the AQI. Different population groups are more sensitive to the harmful effects of the different air pollutants included in the AQI, and the revisions to the

AQI proposed today, together with related informational materials, will enhance notification and communication with these groups. Public education or programs directly targeting these groups may provide the most significant benefits of an air quality action day program. Forecasting days with elevated pollution levels, and then communicating effectively about air quality and associated health effects, may help individuals in these groups limit their outdoor activities and, therefore, to limit their potential for exposures to levels of pollution of concern to them.

3. Significant Harm Level

Significant Harm Levels are those ambient concentrations of air pollutants that present an imminent and substantial endangerment to public health or welfare, or to the environment, as established in 40 CFR 51.151. The SHL is typically set at the same ambient concentration of a pollutant as the AQI value of 500.

In July 1987, to implement the newly established PM₁₀ NAAQS, the Agency promulgated revisions to 40 CFR Part 51, which established requirements for preparation, adoption and submittal of State implementation plans (SIPs) for the PM NAAQS. These revisions included setting an SHL for PM₁₀ of 600 µg/m³, 24-hour average. To implement the 2006 PM_{2.5} NAAQS, in this notice the Agency proposes revisions to 40 CFR Part 51 to set an SHL for PM_{2.5}.

The SHL is one important factor used in designing air pollution Emergency Episode Plans. Such plans are required for certain areas by CAA section 110(a)(2)(G) and associated regulations at 40 CFR 51.150. These plans are used to establish procedures for delivering timely information to citizens potentially affected by elevated PM_{2.5} levels, and initiating curtailment of man-made emissions sources in the area potentially contributing to elevated PM_{2.5} levels. EPA notes that PM_{2.5} levels can be very high during wildfires. Emergency Episode Plans (EEPs) are

not intended to control emissions from wildfires and wildland fire use fires. Fire management agencies, such as the U.S. Forest Service and other Federal land management agencies as well as the State and Tribal Forestry and Agricultural Departments, have purview of wildfire control, and air quality is one of several factors considered by fire management agencies in their emergency response to these unplanned ignitions. The SHL for PM_{2.5} will not constrain or require any alteration of fire management policies or the way in which fire management agencies respond to such fires. The Agency believes that appropriate air quality responses to such emergencies established through an EEP should be developed in a collaborative process working with State and Tribal air quality, forestry and agricultural agencies, Federal land management agencies, private land managers and the public. Further, under EPA's "Exceptional Events Rule," concentrations due to smoke from unplanned ignitions such as wildfires and wildland fire use incidents can be considered for exclusion as exceptional events in regulatory determinations if the fire meets the definition of an exceptional event as specified in the rule. In such cases, the fire episodes alone would not trigger additional CAA air pollution planning and control requirements.

Prescribed fires, which include silvicultural and agricultural burning, can also lead to elevated PM_{2.5} levels. However, the PM_{2.5} levels associated with prescribed fires would be expected to be lower than from wildfires, since prescribed fires typically burn on a smaller scale and for a shorter duration, and are a common mitigation practice for catastrophic wildfire. EPA has developed a policy, the Interim Air Quality Policy on Wildland and Prescribed Fires (EPA 1998), which provides guidance that States can use to mitigate public health and welfare impacts from prescribed burning on wildlands. EPA is working to update this policy to address public health and welfare impacts from prescribed fires on both agricultural lands and wildlands. This

final policy will supersede the Interim Policy and will provide guidance that States will use to minimize the public health impacts from prescribed fires.

II. Rationale for Proposed Revisions to the Air Quality Index

The purpose of this rulemaking is to make revisions to the PM_{2.5} sub-index of the AQI to conform with the revised 24-hour PM_{2.5} standard promulgated in 2006. The health information that supported that PM NAAQS rulemaking is also the basis for this rulemaking. A review of the history of the PM_{2.5} sub-index is provided below as background information for the basis for the proposed conforming changes to the AQI sub-index for PM_{2.5}.

A. Revisions to the AQI for PM_{2.5}

As noted above, EPA last adopted revisions to the uniform air quality index in 1999. The changes included, among others, the addition of a new sub-index for PM_{2.5}. The new sub-index for PM_{2.5} was developed using an approach that was conceptually consistent with past practice for selecting the air quality concentrations associated with the AQI breakpoints. The Agency's historical approach to selecting index breakpoints had been to simply set the AQI value of 100 at the level of the short-term standard (e.g., 24 hours) for a pollutant and the AQI value of 50 at the level of the annual standard, if there is one, or at one-half the level of the short-term standard if there is not. This method of structuring the index is appropriate in the case where a short-term standard is set to protect against the health effects associated with short-term exposures and/or an annual standard is set to protect against health effects associated with long-term exposures. In such cases, the short-term standard in effect defines a level of health protection provided against short-term risks and thus can be a useful benchmark against which to compare daily air quality concentrations.

In the case of the 1997 PM_{2.5} standards, we took a different approach to protecting against the health risks associated with short-term exposures. The intended level of protection against short-term risk was not defined by the 24-hour standard (set at a level of 65 µg/m³) but by the combination of the 24-hour and the annual standards working in concert. In fact, the annual standard (set at a level of 15 µg/m³) was intended to serve as the principal vehicle for protecting against both long-term and short-term PM_{2.5} exposures by lowering the entire day-by-day distribution of PM_{2.5} concentrations in an area throughout the year. See generally 62 FR at 38668-70 (July 18, 1997). Because the 24-hour standard served to provide additional protection against very high short-term concentrations, localized “hotspots” or risks arising from seasonal emissions that would not be well-controlled by a national annual standard, we consequently concluded that it would be appropriate to caution members of sensitive groups exposed to concentrations below the level of the 24-hour standard. We also concluded that it would be inappropriate to compare daily air quality concentrations directly with the level of the annual standard by setting an AQI value of 100 at that level. We wanted to set the AQI value of 100 to reflect the general level of health protection against short-term risks offered by the annual and 24-hour standards combined, consistent with the underlying logic of the historical approach to establishing AQI 100 levels. Therefore EPA set the AQI value of 100 at the midpoint of the range between the annual and the 24-hour PM_{2.5} standards (i.e., 40 µg/m³) in order to reflect the combined role of the 24-hour and the annual PM_{2.5} standards in protecting against short-term risks. Given that decision, we concluded that it was appropriate to retain the historic approach of using the level of the annual standard for an AQI value of 50 and of setting the AQI value of 150 at the level of the 24-hour PM_{2.5} standard (see Table 1 below).

In 2006, EPA revised the NAAQS for PM_{2.5} by, among other things, reducing the level of the 24-hour primary standard from 65 to 35 $\mu\text{g}/\text{m}^3$. We used a significantly expanded and stronger body of evidence from short-term exposure PM_{2.5} studies as the principal basis for establishing the level of the primary 24-hour standard, which is now specifically aimed at protecting against health effects associated with short-term exposures to PM_{2.5}. See generally 71 FR at 31151-72. In setting the level of the 24-hour PM_{2.5} standard at 35 $\mu\text{g}/\text{m}^3$, the Administrator judged that this standard would protect public health with an adequate margin of safety from serious health effects, including premature mortality and hospital admissions for cardiorespiratory causes that are associated with short-term exposure to PM_{2.5}. *Id.* at 61172.

With the promulgation of the 2006 24-hour PM_{2.5} standard, the short-term standard thus defines a level of health protection provided against short-term risks that can serve as an appropriate benchmark against which to compare daily air quality concentrations. As a result, EPA proposes to set an AQI value of 100 equal to the level of the 24-hour primary PM_{2.5} standard (35 $\mu\text{g}/\text{m}^3$, 24-hour average). We also propose to reduce the AQI value of 150 (now 65 $\mu\text{g}/\text{m}^3$) in proportion to the reduction in the AQI value of 100 (to 55 $\mu\text{g}/\text{m}^3$ – rounded to the nearest 5 $\mu\text{g}/\text{m}^3$, 24-hour average). These proposed changes are based on the more extensive and stronger body of evidence linking 24-hour PM_{2.5} concentrations with serious morbidity and mortality effects, including: premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions and emergency department visits), changes in lung function and increased respiratory symptoms, as well as new evidence for more subtle indicators of cardiovascular health. *Id.* at 61152. Consistent with past practice, we have also tentatively concluded that it is appropriate to retain the AQI value of 50 at the level of the annual standard (15 $\mu\text{g}/\text{m}^3$).

A review of the history of the AQI value of 500 for PM_{10} and of the AQI value of 500 for $PM_{2.5}$ is useful background prior to explaining the basis for proposing to retain an AQI value of 500 at $500 \mu\text{g}/\text{m}^3$, 24-hour average, for $PM_{2.5}$.

The current AQI value of 500 for PM_{10} was set in 1987 at the level of $600 \mu\text{g}/\text{m}^3$, 24-hour average, on the basis of the increased mortality found during historical wintertime pollution episodes in London. (52 FR 24687–24688) The episodes were primarily due to emissions from coal combustion during periods with very low atmospheric dispersion. PM concentrations during these episodes, measured by the British Smoke method, were generally in the range of 500 to $1000 \mu\text{g}/\text{m}^3$. While some coarse-mode particles are included, mainly fine mode-particles are collected using the British Smoke method. In the 1987 rulemaking that established the upper bound index value for PM_{10} , we cited a generally held opinion that the British Smoke method measures PM with a cutpoint of approximately 4.5 microns. In establishing this value for PM_{10} , we assumed that concentrations of PM_{10} , which includes both coarse and fine particles, during episodes of concern would be about $100 \mu\text{g}/\text{m}^3$ higher than the PM concentration measured in terms of British Smoke (52 FR 24688). The upper bound index value of $600 \mu\text{g}/\text{m}^3$ was developed by selecting the lower end of the range of harmful concentrations during the historical wintertime pollution episodes in London ($500 \mu\text{g}/\text{m}^3$) and adding a margin of $100 \mu\text{g}/\text{m}^3$ to account for this measurement difference. The AQI value of 500 for PM_{10} ($600 \mu\text{g}/\text{m}^3$, 24-hour average) is rarely exceeded in the U.S. From October 2003 through October 2006, there have been 71 site-days where PM_{10} concentrations have exceeded $600 \mu\text{g}/\text{m}^3$. The majority of the incidents (approximately 80%) occurred in Inyo and Mono counties in California during winter and spring and most likely was caused by wind blown dust. Other areas which have had PM_{10}

concentrations greater than the AQI value of 500 include southern Arizona, southern Washington and El Paso, TX. We are not proposing any revision to the AQI value of 500 for PM₁₀.

The current PM_{2.5} concentration corresponding to an AQI value of 500 is 500 µg/m³, 24-hour average. This was proposed in 1998 and finalized in 1999 (63 FR 67829 and 64 FR 42530, respectively). Because there were few PM_{2.5} monitoring data available at that time, the proposal was based on the stated assumption that PM concentrations measured by the British Smoke method are approximately equivalent to PM_{2.5} concentrations. We received no comment on this proposed level and we finalized it as proposed. The 500 µg/m³ PM_{2.5} level is rarely exceeded in the U.S., with only one incident occurring between October 2003 and October 2006 in Fairbanks, AK due to smoke from a wildfire.

In considering revisions to an AQI value of 500 for PM_{2.5}, we have taken note that our proposal and final action in 1998 and 1999, based on an assumption of approximate equivalence between the British Smoke method and the current PM_{2.5} method, is not entirely consistent with the view we cited in 1987 that the British Smoke method has a cutoff of 4.5 microns (52 FR 24688).² In addition, because of the dramatic increase in PM_{2.5} monitoring data since that rulemaking, it is appropriate to reassess the previous levels for the AQI value and assess findings from the London episodes to review whether our previous determinations are still justified on the basis of the available information or whether revision to the AQI value of 500 for PM_{2.5} is warranted at this time.

² EPA, however, also does not possess sufficient information to fully assess this differential and the extent to which particle sizes above PM_{2.5} and below PM_{4.5} existed and were involved in the London episodes and how such particles may or may not compare with current measurement and levels of PM_{2.5} in the United States.

In a 2001 study (Bell and Davis³), ambient air concentration data from 1952 and 1953 were analyzed for total suspended matter (TSM) and sulfur dioxide (SO₂) as reported for 12 monitors in London; no other pollutants were routinely monitored at that time. The Bell and Davis study showed TSM levels on average were >1000 µg/m³ (episode average TSM = 1,400 µg/m³; episode highest daily average TSM = 1,620 µg/m³), which translates to PM₁₀ levels around 1000 µg/m³ during the episode. The average SO₂ concentration was reported as 0.57 ppm (~1600 µg/m³) and the highest daily concentration was reported as 0.69 ppm (~2000 µg/m³). The authors analyzed weekly mortality and air pollution data including several weeks before and after the "fog" episode (October 1952 - March 1953) and corresponding weeks in 1951 and 1952. Increased mortality was observed for several months after the acute fog episode when air pollutant levels had dropped to "normal" levels, which were still much greater than currently acceptable regulatory air quality standards. The authors analyzed insurance claim records and observed a strong relationship between illness and SO₂ concentrations as well as respiratory disease-related hospital admissions data, total hospital admissions, and emergency "bed service" for respiratory and cardiac diseases. The authors concluded that "...the true scope and scale of the health effects linked with London's lethal smog extended over a longer period than originally estimated. The fact that respiratory deaths and illness in January and February are more highly correlated with average measures of SO₂ and TSM for the previous week than for the current week suggests increased morbidity and mortality may be driven by cumulative exposures or by a lagged effect." (see page 393/3).

While there is little uncertainty with regard to the relationship between high TSM and SO₂ levels and increased mortality during the London fog episodes, it is also true that

³ Bell, M.L.; Davis, D.L. (2001) Reassessment of the Lethal London Fog of 1952: Novel Indicators of Acute and Chronic Consequences of Acute Exposure to Air Pollution. *Environmental Health Perspectives*, Volume 109, Supplement 3.

SO₂ and TSM levels were highly correlated (0.98), and, therefore, "...it is difficult to separate their effects." (see Bell and Davis, p. 390/2). Against this high TSM and SO₂ correlation occurring in the London, it can also be observed that other more recent pollution events, including events such as forest wildfires, may contain substantially less SO₂ and may be more heterogeneous with respect to particle size distribution.

Even though the British Smoke method, which contains a cutoff of 4.5 microns, is not equivalent to our current measurement of PM_{2.5} levels, EPA believes that it does not possess conclusive information that precisely defines a concentration at which the AQI level of 500 for PM_{2.5} should be set.

In this view, conditions occurring during the London incident over 50 years ago are not likely to be replicated in the United States and deriving from this incident a threshold for effects for an AQI of 500 from PM_{2.5} standing alone, or in combination with other pollutants more likely to occur in the United States in the present day, is not possible with precision. This view also reflects past practice in that EPA previously solicited comment in 1986 and 1999 to identify additional information to delineate population effects from high levels of particulate matter in smoke and its final actions in 1987 and 1999 did not modify the AQI level of 500 based on the lack of additional information to persuade the Administrator to make a change. Thus, despite the Agency's possession of considerably more monitoring information concerning PM_{2.5} levels now than at the time of its previous review, this information does not provide a determinative course for action concerning the upper level of the AQI for PM_{2.5}. Indeed, as noted elsewhere, there are limited times at which the upper AQI values for PM₁₀ or PM_{2.5} are exceeded.

We have used the historical wintertime pollution episodes in London to propose setting an AQI value of 500 for PM_{2.5} as described above because it is still the best available information – there is little information about similar, more recent, air pollution episodes and associated impacts on community health upon which to base a decision. In light of this, we are encouraging state and local air agencies to send us information about air quality measurements and associated public health impacts, if available, related to episodes of high PM_{2.5} levels.

Information from increased monitoring does provide some direction concerning the levels of PM_{2.5} that may occur within ambient PM₁₀ within the United States. On average, about 60 percent of ambient PM₁₀ measured in the northeastern, southeastern, and industrial midwest portions of the U.S. consists of PM_{2.5}.⁴ An alternative approach could base the 500 level of the PM_{2.5} AQI on the relationship between PM_{2.5} and PM₁₀. Using this approach, based on the above-mentioned data, would produce a level of 350 µg/m³ for the 500 level of the PM_{2.5} AQI (60 percent of 600 µg/m³, which is the 500 level of the PM₁₀ AQI, rounded to the nearest 50 µg/m³). However, EPA notes that there is considerable variability between locations in the percentage of PM₁₀ that consists of PM_{2.5} and that, consistent with its most recent review of both the PM₁₀ and PM_{2.5} standards, health effects associated with exposure to PM₁₀ and PM_{2.5} are not equivalent. EPA additionally notes that some states have adopted AQI values for the 24-hour PM_{2.5} standard at concentrations lower than the current federal AQI. Therefore, EPA requests comment on possible alternative approaches to setting the 500 level of the PM_{2.5} AQI, including comment on state approaches.

⁴ More specifically, in 2001-2003, the median among monitoring sites (in each of the three cited portions of the U.S.) of the annual average of the daily ratio of 24-hour PM_{2.5} and PM₁₀ was between 0.60 and 0.65. A graph showing the median ratios in defined seven portions of the U.S. is provided in section 2.4.6 of Review of the National Ambient Air Quality Standards for Particulate Matter: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper. Research Triangle Park, NC 27711: Office of Air Quality Planning and Standards; report no. EPA EPA-452/R-05-005a. December 2005. This document is available in the docket and is also posted at http://epa.gov/ttn/naaqs/standards/pm/data/pmstaffpaper_20051221.pdf.

For the intermediate breakpoints in the AQI between the values of 150 and 500, EPA proposes PM_{2.5} concentrations that generally reflect a linear relationship between increasing index values and increasing PM_{2.5} concentrations between AQI values of 150 and 500. Given the relative lack of data with respect to 24-hour concentrations above the AQI value of 150 and increasing scarcity of data at higher and higher levels except in some arid areas subject to windblown dust, EPA proposes to maintain the existing AQI values of 200, 300 and 400 at PM_{2.5} concentrations which are approximately equidistant between the AQI values of 150 and 500. Thus, EPA is proposing to retain the current concentrations for these values. Should EPA determine that a concentration other than the one being proposed in this action is appropriate for an AQI value of 500 for PM_{2.5}, EPA would make conforming changes to Table 1.

Table 1. Current breakpoints and proposed revisions to PM_{2.5} sub-index

| AQI Category | Index Values | PM _{2.5} 24-hour (µg/m ³) | |
|--------------------------------|--------------|--|--------------|
| | | Current | Proposed |
| Good | 0 - 50 | 0.0 - 15.4 | No change |
| Moderate | 51 - 100 | 15.5 - 40.4 | 15.5 - 35.4 |
| Unhealthy for Sensitive Groups | 101 - 150 | 40.5 - 65.4 | 35.5 - 55.4 |
| Unhealthy | 151 - 200 | 65.5 - 150.4 | 55.5 - 150.4 |
| Very Unhealthy | 201 - 300 | 150.5 - 250.4 | No change |
| Hazardous | 301 - 400 | 250.5 - 350.4 | No change |
| | 401 - 500 | 350.5 - 500 | No change |

B. Expectations Regarding How Frequently the New AQI levels for PM_{2.5} May Be Exceeded

We have compared the level of the AQI value of 500 for PM_{2.5} (500 µg/m³, 24-hour average) with air quality data from October 2003 through October 2006 in the AQS database.

AIRNow data collected using non-reference method technologies were used to fill in for missing FRM data where available including days when FRM measurements were not scheduled to be collected. We considered 845 monitoring sites that had at least 75 percent data completeness after this gap filling procedure. During these 37 months, only one monitor exceeded the level of the AQI value of 500 for $\text{PM}_{2.5}$ ($500 \mu\text{g}/\text{m}^3$) under consideration. This was a monitor in Fairbanks, AK which was affected by smoke from wildfires. The monitor experienced one day above the AQI value of 500 in the summer of 2004.

We have also reviewed the same 845 monitoring sites for this 37-month period with respect to the occurrence of $\text{PM}_{2.5}$ above the current and proposed AQI 100 level. We did an analysis to find out how many more days there would be with $\text{PM}_{2.5}$ concentrations above the AQI 100 level if the level of the 24-hour $\text{PM}_{2.5}$ NAAQS had been in effect in that period, and, as expected there were more days with $\text{PM}_{2.5}$ concentrations above $35 \mu\text{g}/\text{m}^3$ than there were days above $40 \mu\text{g}/\text{m}^3$. Generally, the difference in the count of days was larger in areas with higher $\text{PM}_{2.5}$ concentrations in general. The largest such difference was in Los Angeles, CA, where the number of days above $35 \mu\text{g}/\text{m}^3$ per year was about 50 percent greater than the number of days above $40 \mu\text{g}/\text{m}^3$.

Looking more closely, we observed that across all the monitoring sites, the difference in the number of days above 35 versus $40 \mu\text{g}/\text{m}^3$ was typically attributable to days with concentrations in the range of 35 to $55 \mu\text{g}/\text{m}^3$. When comparing the number of days with concentrations above the other (higher concentration) pair of current versus proposed index values, much smaller differences were observed. For example, the number of days with concentrations above the proposed level of $55 \mu\text{g}/\text{m}^3$ for the lower end of the “Unhealthy” AQI

category was not much higher than for the current level of $65 \mu\text{g}/\text{m}^3$. The only exception was in Pittsburgh, PA.⁵

C. *Significant Harm Level*

The upper bound index value of 500 for most pollutants corresponds to the SHL, codified in 40 CFR Part 51, subpart H (50.150 - 50.153) under the Prevention of Air Pollution Emergency Episodes program. The SHL is set at a level that represents imminent and substantial endangerment to public health. When we set the AQI levels for $\text{PM}_{2.5}$ in 1999, we anticipated that soon thereafter we would also establish an SHL for $\text{PM}_{2.5}$, but to date we have not done so. For the reasons discussed above, EPA is proposing to set the SHL equal to the AQI value of 500, at a level of $500 \mu\text{g}/\text{m}^3$, 24-hour average. Information about actions required by states can be found in a related EPA memorandum.⁶

III. **Statutory and Executive Order Reviews**

A. *Executive Order 12866: Regulatory Planning and Review*

Under Executive Order 12866 (58 FR 51735; October 4, 1993), this action is a “significant regulatory action.” because it may raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order. Accordingly, EPA submitted this action to OMB for review under Executive Order 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

⁵ The docket contains a document providing more detailed tabular and graphical comparisons of the sort summarized in this paragraph, Analysis of Fine Particulate Matter Data to Support a Possible $\text{PM}_{2.5}$ Air Quality Index Revision; August 2007

⁶ "Guidance on SIP elements required under Sections 110(a)(1) and (2) for the 1997 8-hour Ozone and $\text{PM}_{2.5}$ National Ambient Air Quality Standards." Memorandum from William T. Harnett, Director Air Quality Policy Division, to the EPA Regional Air Division Directors.

B. Paperwork Reduction Act

This action does not impose any new information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. Burden is defined at 5 CFR 1320.3(b). Information collection requirements pertaining to the Ambient Air Quality Surveillance Regulations contained in 40 CFR part 58 have been previously approved by OMB (control number 2060–0084, EPA ICR number 0940.20). A copy of the OMB approved Information Collection Request (ICR) may be obtained from Susan Auby, Collection Strategies Division; U.S. Environmental Protection Agency (2822T); 1200 Pennsylvania Ave., NW, Washington, DC 20460 or by calling (202) 566-1672.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of this rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. This proposed rule will not impose any requirements on small entities. Today's proposal to revise the AQI sub-index for PM_{2.5} applies to existing air quality reporting requirements only for metropolitan statistical areas (MSA's) with populations over 350,000 people. State, local, and Tribal air quality agencies that currently report the AQI for PM_{2.5} are the only entities potentially affected. This proposal, if promulgated, would not impose any new reporting requirements. For example it does not require any additional agencies to report the AQI, nor does it change the way that agencies are required to report the AQI. It simply changes the breakpoints at which certain the categories in the AQI sub-index for PM_{2.5} are reported. The main expenses required by this rule will be the cost of changing the breakpoints in the automated reporting systems that these agencies use. However, we continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. Unfunded Mandates Reform Act

This rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. This is because the main expenses that this rule would require, if promulgated, are those associated with changing the breakpoints for certain categories in the AQI sub-index for PM_{2.5} in automated reporting systems that State, local, and tribal agencies use. Thus, this rule is not subject to the requirements of sections 202 and 205 of the UMRA. This rule is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. This is because AQI

reporting is currently required only in MSA's with populations greater than 350,000, a requirement that this rule would not change.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism" (64 FR 43255; August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This is because this proposed rule does not propose any new reporting requirements or actions from State or local governments but simply changes the air quality concentrations for PM_{2.5} at which various health messages are delivered. Thus, Executive Order 13132 does not apply to this rule.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 13175, November 9, 2000). This proposal to revise the AQI sub-index for PM_{2.5} applies to

existing air quality reporting requirements only for MSA's with populations over 350,000 people and it does not have a substantial direct effect on one or more Indian tribes, since tribes are not obligated to report the AQI. Moreover, this proposed rule implements requirements specifically set forth by the Congress in section 319 of the CAA without the exercise of any discretion by the EPA. Thus, Executive Order 13175 does not apply to this rule.

Although Executive Order 13175 does not apply to this action, EPA contacted tribal environmental professionals during the development of this rule. The EPA staff participated in the regularly scheduled Tribal Air call sponsored by the National Tribal Air Association during the summer of 2007 as this proposal was under development. EPA specifically solicits additional comment on this proposed action from tribal officials.

G. Executive Order 13045: Protection of Children from Environmental Health & Safety Risks

This action is not subject to the Executive Order 13045 (62 F.R. 19885, April 23, 1997) because it is not economically significant as defined in Executive Order 12866. This action's health and risk assessments are contained in sections I.C and II.A of this preamble. The AQI constitutes a uniform air quality index used by States for daily air quality reporting to the general public, as required by section 319 of the CAA. With regard to the sub-index for PM_{2.5}, the AQI category descriptors, health and cautionary statements reflect the increased health risk to children which may result from such exposures. The information offered by AQI advisories may be especially important for children because children, along with other sensitive population subgroups such as the elderly and people with existing heart or lung disease, are potentially susceptible to health effects resulting from PM exposure. These proposed revisions to the AQI sub-index for PM_{2.5} will provide children, and members of other sensitive groups, increased public health protection through warnings about daily exposures at lower PM_{2.5} levels. As a

matter of EPA policy, and because children are considered to be a susceptible population, we have carefully evaluated the environmental health effects of exposures to PM pollution among children during the review of the PM NAAQS that concluded in 2006. These effects and the size of the population affected are summarized in section 9.2.4 of the PM Criteria Document and section 3.5 of the PM Staff Paper, and the results of our evaluation of the effect of PM pollution on children are discussed in sections II and III of the preamble to the final decision on the PM NAAQS (71 FR 61144, October 17, 2006). The public is invited to submit comments or identify peer-reviewed studies and data that assess effects of early life exposure to PM_{2.5}.

H. Executive Order 13211: Actions that Significantly Affect Energy Supply, Distribution or Use

This action is not a “significant energy action” as defined in Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use” (66 FR 28355; May 22, 2001) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The purpose of this proposed rule is to revise breakpoints for the AQI sub-index for PM_{2.5}. This sub-index is currently being reported, and simply revising the levels at which different categories are reported should have no effect on the supply, distribution, or use of energy.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law No. 104-113, §12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to

provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards. This proposed rulemaking does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (59 FR 7629; February 16, 1994) establishes Federal executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. The nature of this action is to inform the general public, including minorities and low-income populations, about the nature of the air pollution in the areas they live. This action proposes to revise the AQI sub-index for PM_{2.5} to be consistent with the PM_{2.5} NAAQS, thereby providing a uniform tool for States to use to develop programs which will caution particularly sensitive people to minimize their exposures and educate the public about general health effects associated with exposure to different PM_{2.5} levels. States may also use information established as part of the AQI to trigger programs designed to reduce emissions to avoid exceedances of the NAAQS. Therefore, this proposed rule will help

facilitate public participation, outreach, and communication in areas where environmental justice issues are present.

IV. References

- Bell, M.L.; Davis, D.L. (2001) Reassessment of the Lethal London Fog of 1952: Novel Indicators of Acute and Chronic Consequences of Acute Exposure to Air Pollution. Environmental Health Perspectives, Volume 109, Supplement 3.
- EPA, (1998) Interim Air Quality Policy on Wildland and Prescribed Fires. Research Triangle Park, NC 27711: Office of Air Quality Planning and Standards. Available online at: <http://www.epa.gov/ttn/oarpg/t1/memoranda/firefnl.pdf>
- EPA, (2006) Review of the National Ambient Air Quality Standards for Particulate Matter: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper. Research Triangle Park, NC 27711: Office of Air Quality Planning and Standards; EPA report no. EPA EPA-452/R-05-005a. December 2005. Available online at: http://epa.gov/ttn/naaqs/standards/pm/data/pmstaffpaper_20051221.pdf
- Rizzo, M. (2007). Analysis of Fine Particulate Matter Data to Support a Possible PM_{2.5} Air Quality Index Revision. Analysis in AQI docket EPA-HQ-OAR-2007-0195. August, 2007.
- Schmidt, M; Frank, N.; Mintz, D.; Rao, T.; McCluney, L. (2005). Analyses of particulate matter (PM) data for the PM NAAQS review. Memorandum to PM NAAQS review docket EPA-HQ-OAR-2001-0017. June 30, 2005. Available online at: http://epa.gov/ttn/naaqs/standards/pm/data/schmidt_63005.pdf

List of Subjects

40 CFR Part 51

Administrative practice and procedure, air pollution control, intergovernmental relations, reporting and recordkeeping requirements, hydrocarbons, ozone, carbon monoxide, sulfur oxides, nitrogen dioxide, lead, particulate matter, State implementation plans.

40 CFR Part 58

Environmental protection, Air pollution control, Air quality surveillance and data reporting, Ambient air quality monitoring network design and siting, Intergovernmental relations, pollutant standards index, Quality assurance program.

Dated:

Stephen L. Johnson,
Administrator.

For the reasons set forth in the preamble, 40 CFR parts 51 and 58 are proposed to be amended as follows:

PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS

1. The authority citation for part 51 continues to read as follows;

Authority: 23 U.S.C. 101; 42 U.S.C. 7401-7671q.

2.. Section 51.151 is amended by adding an entry to the end of the list to read as follows

§ 51.151 Significant harm levels.

* * * * *

PM_{2.5}—500 micrograms/cubic meter; 24-hour average.

* * * * *

PART 58—AMBIENT AIR QUALITY SURVEILLANCE

4. The authority citation of part 58 continues to read as follows:

Authority: 42 U.S.C. 7410, 7601(a), and 7619.

5. Appendix G to Part 58 is amended as follows:

- a. By revising section 9.
- b. By revising section 10.
- c. In section 12 by revising table 2.
- d. By revising section 13.

Appendix G to Part 58 - Uniform Air Quality Index (AQI) and Daily Reporting

* * * * *

9. How Does the AQI Relate to Air Pollution Levels?

For each pollutant, the AQI transforms ambient concentrations to a scale from 0 to 500. The AQI is keyed as appropriate to the national ambient air quality standards (NAAQS) for each pollutant. In most cases, the index value of 100 is associated with the numerical level of the short-term standard (i.e., averaging time of 24-hours or less) for each pollutant. A different approach is taken for NO₂, for which no short-term standard has been established. The index value of 50 is associated with the numerical level of the annual standard for a pollutant, if there is one, at one-half the level of the short-term standard for the pollutant, or at the level at which it is appropriate to begin to provide guidance on cautionary language. Higher categories of the index are based on increasingly serious health effects and increasing proportions of the population that are likely to be affected. The index is related to other air pollution concentrations through linear interpolation based on these levels. The AQI is equal to the highest of the numbers corresponding to each pollutant. For the purposes of reporting the AQI, the sub-indexes for PM₁₀ and PM_{2.5} are to be considered separately. The pollutant responsible for the highest index value (the reported AQI) is called the “critical” pollutant.

10. What Monitors Should I Use to Get the Pollutant Concentrations For Calculating the AQI?

You must use concentration data from population-oriented State/Local Air Monitoring Station (SLAMS) or parts of the SLAMS required by 40 CFR 58.10 for each pollutant except PM. For PM, calculate and report the AQI on days for which you have measured air quality data (e.g., from continuous PM_{2.5} monitors required in Appendix D to this part). You may use PM measurements from monitors that are not reference or equivalent methods (for example,

continuous PM_{2.5} monitors). Detailed guidance for relating non-approved measurements to approved methods by statistical linear regression is referenced in section 13 below.

* * * * *

12. * * *

TABLE 2.—BREAKPOINTS FOR THE AQI

| These breakpoints | | | | | | | Equal these AQI's | |
|--------------------------------|---|---|--|-----------|-----------------------|-----------------------|-------------------|------------------------------------|
| O ₃ (ppm) 8-hour | O ₃ (ppm) 1-hour ¹ | PM _{2.5} (µg/m ³) | PM ₁₀ (µg/m ³) | CO (ppm) | SO ₂ (ppm) | NO ₂ (ppm) | AQI | Category |
| 0.000-0.064 | | 0-15.4 | 0-54 | 0.0-4.4 | 0.000-0.034 | (³) | 0-50 | Good. |
| 0.065-0.084 | | 15.5-35.4 | 55-154 | 4.5-9.4 | 0.035-0.144 | (³) | 51-100 | Moderate. |
| 0.085-0.104 | 0.125-0.164 | 35.5-55.4 | 155-254 | 9.5-12.4 | 0.145-0.224 | (³) | 101-150 | Unhealthy for Sensitive Groups. |
| 0.105-0.124 | 0.165-0.204 | 55.5-150.4 | 255-354 | 12.5-15.4 | 0.225-0.304 | (³) | 151-200 | Unhealthy. |
| 0.125-0.374 | 0.205-0.404 | 150.5-250.4 | 355-424 | 15.5-30.4 | 0.305-0.604 | 0.65-1.24 | 201-300 | Very Unhealthy. |
| (²)..... | 0.405-0.504 | 250.5-350.4 | 425-504 | 30.5-40.4 | 0.605-0.804 | 1.25-1.64 | 301-400 | |
| (²)..... | 0.505-0.604 | 350.5-500.4 | 505-604 | 40.5-50.4 | 0.805-1.004 | 1.65-2.04 | 401-500 | Hazardous. |

¹ Areas are generally required to report the AQI based on 8-hour ozone values. However, there are a small number of areas where an AQI based on 1-hour ozone values would be more precautionary. In these cases, in addition to calculating the 8-hour ozone index value, the 1-hour ozone index value may be calculated, and the maximum of the two values reported.

² 8-hour O₃ values do not define higher AQI values (≥ 301). AQI values of 301 or greater are calculated with 1-hour O₃ concentrations.

³ NO₂ has no short-term NAAQS, and can generate an AQI only above the value of 200

13. What Additional Information Should I Know?

The EPA has developed a computer program to calculate the AQI for you. The program prompts for inputs, and it displays all the pertinent information for the AQI (the index value, color, category, sensitive group, health effects, and cautionary language). The EPA has also prepared a brochure on the AQI that explains the index in detail (The Air Quality Index), Reporting Guidance (Guideline for Public Reporting of Daily Air Quality) that provides associated health effects and cautionary statements, and Forecasting Guidance (Guideline for Developing an Ozone Forecasting Program) that explains the steps necessary to start an air pollution forecasting program. You can download the program and the guidance documents at www.airnow.gov.

Reference for relating non-approved PM measurements to approved methods (Eberly, S., T. Fitz-Simons, T. Hanley, L. Weinstock., T. Tamanini, G. Denniston, B. Lambeth, E. Michel, S. Bortnick. Data Quality Objectives (DQOs) For Relating Federal Reference Method (FRM) and Continuous PM_{2.5} Measurements to Report an Air Quality Index (AQI). U.S. Environmental Protection Agency, research Triangle Park, NC. EPA-454/B-02-002, November 2002) can be found on the Ambient Monitoring Technology Information Center (AMTIC) Web site, <http://www.epa.gov/ttnamti1/>