

# National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM)

## Second Draft Policy Assessment Schedule and Overview

Ms. Lydia Wegman

Dr. Karen Martin

Ms. Beth Hassett-Sipple

Dr. Scott Jenkins

Ms. Vicki Sandiford

Dr. Marc Pitchford

US Environmental Protection Agency  
Office of Air Quality Planning and Standards  
Health and Environmental Impacts Division, OAQPS

July 26, 2010

## Current Schedule

Final Integrated Science Assessment (ISA)	December 2009
Final Risk Assessment (RA)	June 2010
Final Urban-Focused Visibility Assessment (UFVA)	July 2010
Public Comment Period for Second Draft Policy Assessment (PA)	August 16, 2010 (Extended to August 30 for Chapter 4)
Final Policy Assessment (PA)	September 2010
Proposed Rule	February 2011
Final Rule	October 2011

For additional information, see [http://www.epa.gov/ttn/naaqs/standards/pm/s\\_pm\\_index.html](http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_index.html)

## Structure of Policy Assessment

- Chapter 1 – Introduction
- Review of Primary Standards
  - Chapter 2 – Fine Particles
  - Chapter 3 – Thoracic Coarse Particles
- Review of Secondary Standards
  - Chapter 4 – Visibility-related Effects
  - Chapter 5 – Other Welfare Effects

## Overarching Changes Made in Second Draft PA

- Streamlined document by reducing redundancy and by relying more extensively on ISA, RA, and UFVA
- Added an Executive Summary
- Clarified approaches to reviewing standards; added new figures framing these approaches
- More explicitly articulated the application of the approaches in reaching staff conclusions on:
  - Adequacy of current standards
  - Potential alternative standards appropriate to consider
- Added sections discussing key uncertainties and areas for future research and data collection

## Chapter 2 - Primary Standards for Fine Particles Overview of New Analyses/Discussion

- Clarified approach for translating epidemiological evidence into basis for staff conclusions
- Conducted additional analyses to inform staff conclusions on alternative standards:
  - Forms
    - Annual standard: Characterized potential for disproportionate impacts on susceptible populations
    - 24-hour standard: Considered stability of 98<sup>th</sup> vs. 99<sup>th</sup> percentile forms
  - Levels:
    - Annual standard - Considered insights gained from:
      - Confidence bounds on PM<sub>2.5</sub> concentration-response relationships
      - Different statistical metrics characterizing air quality distributions
        - » Based on composite versus maximum monitor distributions
      - Nature, magnitude, and uncertainties of risks remaining upon simulating alternative standards as well as overall confidence in risk estimates
    - 24-hour standard: Analyzed peak-to-mean ratios

## Chapter 2 - Overview of Staff Conclusions

- Currently available information clearly calls into question adequacy of current standards
- Alternative standards appropriate to consider:
  - Forms:
    - Annual standard: Consider eliminating spatial averaging provision
    - 24-hour standard: Consider retaining 98<sup>th</sup> percentile form
  - Levels: Rely primarily on a “generally controlling” annual standard, in conjunction with a 24-hour standard providing supplemental protection
    - Annual standard: Consider alternative standard levels in the range of 13 to 11  $\mu\text{g}/\text{m}^3$
    - 24-Hour standard: Consider retaining level of 35  $\mu\text{g}/\text{m}^3$ ; consider revising to 30  $\mu\text{g}/\text{m}^3$ , particularly in conjunction with an annual standard level of 11  $\mu\text{g}/\text{m}^3$

## Chapter 3 - Primary Standard for Thoracic Coarse Particles Overview of New Analyses/Discussion

- Expanded discussion of potential approaches to evaluating the adequacy of the current  $PM_{10}$  standard, including the following:
  - Added figures characterizing  $PM_{10}$  air quality in locations of  $PM_{10-2.5}$  health studies
  - Expanded discussion of the epidemiologic evidence and air quality information as it relates to the adequacy of the current  $PM_{10}$  standard
- Expanded discussion of the evidence and added air quality analyses to inform consideration of potential alternative standards, including the following:
  - **Indicator:** Added air quality analysis characterizing the relationship between  $PM_{10-2.5}$  and  $PM_{10}$  concentrations in different regions of the U.S.
  - **Form:** Expanded discussion of considerations relevant for a decision on form
  - **Level:** Added new section discussing a specific range of potential alternative standard levels for consideration, including the addition of air quality analyses characterizing the relationship between the current and potential alternative standards and the addition of figures characterizing the  $PM_{10}$  air quality in locations of  $PM_{10-2.5}$  health studies

## Chapter 3 - Overview of Staff Conclusions

- Available evidence and air quality information could support retaining or revising the current 24-hour  $PM_{10}$  standard, depending on the weight placed on that evidence and information, as well as the associated uncertainties
- To the extent revisions are considered, consideration should be given to the following:
  - Retaining the  $PM_{10}$  indicator and the 24-hour averaging time
  - Revising the form and level, with consideration of levels from 85 to about 65  $\mu\text{g}/\text{m}^3$ , in conjunction with a 98<sup>th</sup> percentile form

## Chapter 4 - Secondary Standards for Visibility-Related Effects Overview of New Analyses/Discussion

- Re-evaluated the choice of indicator based on CASAC and AAMMS comments
  - Developed and evaluated a speciated  $PM_{2.5}$  mass calculated light extinction indicator from a  $PM_{10}$  light extinction indicator to allow the coupling of a PM light extinction indicator with currently available speciated  $PM_{2.5}$  mass air quality data
- Conducted new analyses to inform alternative standards
  - Assessed PM species components that contribute to the high value days selected by different combinations of indices/forms (Appendix C)
- Corrected a data processing error in the UFVA analyses which caused organic carbonaceous material estimated by the SANDWICH method to be over-estimated on some days
  - Corrections are quite small and do not affect conclusions
  - UFVA: Graphics and tables based on “current conditions” have been updated in the final UFVA – changes are imperceptible in most cases
  - PA: Simplified methods not affected, since these methods did not use SANDWICH
- Comment period on chapter 4 extended to August 30, 2010

## Chapter 4 - Overview of Staff Conclusions

- Currently available information clearly calls into question adequacy of current standards
- Alternative standards appropriate to consider:
  - Indicator:
    - New speciated  $PM_{2.5}$  mass calculated light extinction indicator
    - Daylight hours only and hours with relative humidity of 90% or below.
  - Averaging time: 1 hour
  - Forms:
    - Maximum daily daylight 1-hr form, in conjunction with 90<sup>th</sup> or 95<sup>th</sup> percentile
    - All daylight hours, in conjunction with 98<sup>th</sup> percentile
  - Levels:
    - $PM_{2.5}$  light extinction in a range of 64 to 191  $Mm^{-1}$