

**Qualitative Project-level Hotspot Analysis in  
PM10 and PM2.5 Nonattainment and  
Maintenance Areas**

Welcome to FHWA Resource Center's training on conducting qualitative project-level hotspot analyses in PM nonattainment and maintenance areas.

This training, and its materials, are intended for informational and discussion purposes only. Please refer to the actual rules, regulations, and guidance for implementation purposes.

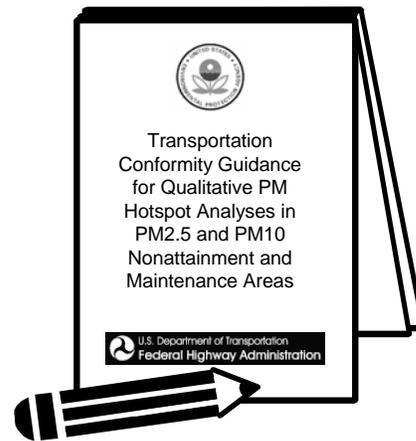
**This training covers:**

- **Background information on particulate matter (PM)**
- **Project-level conformity requirements under applicable laws and regulation**
- **Projects subject to a PM hotspot analysis**
- **Roles and responsibilities for the different agencies involved in PM project-level conformity determinations**
- **When PM hotspot analyses must be preformed**
- **Types of information that may be included in a qualitative hotspot finding**
- **Analysis examples**

## Structure of Training

This training generally follows the Qualitative PM Hotspot Guidance released by EPA and FHWA:

- 1) Introduction
- 2) Conformity Requirements
- 3) Analytical Requirements
- 4) Developing a Hotspot Analysis



The Qualitative PM Hotspot Guidance, published on March 10, 2006, is available at <http://www.epa.gov/otaq/stateresources/transconf/index.htm>.

The guidance describes how to complete the analysis that is required under applicable law and current regulations related to qualitative hotspot analyses for particulate matter (PM) pollution from transportation sources when making project level conformity determinations.

The 2006 Guidance supercedes the September 2001 FHWA guidance for performing qualitative project-level hot spot analysis in PM10 nonattainment and maintenance areas. Please note that a PM10 hotspot analysis that was started prior to the release of the new guidance may be completed according to the 2001 guidance. Any PM2.5 hotspot analysis that was started prior to the release of the new guidance must meet the March 2006 final rule's requirements, and should meet the new guidance whenever possible.

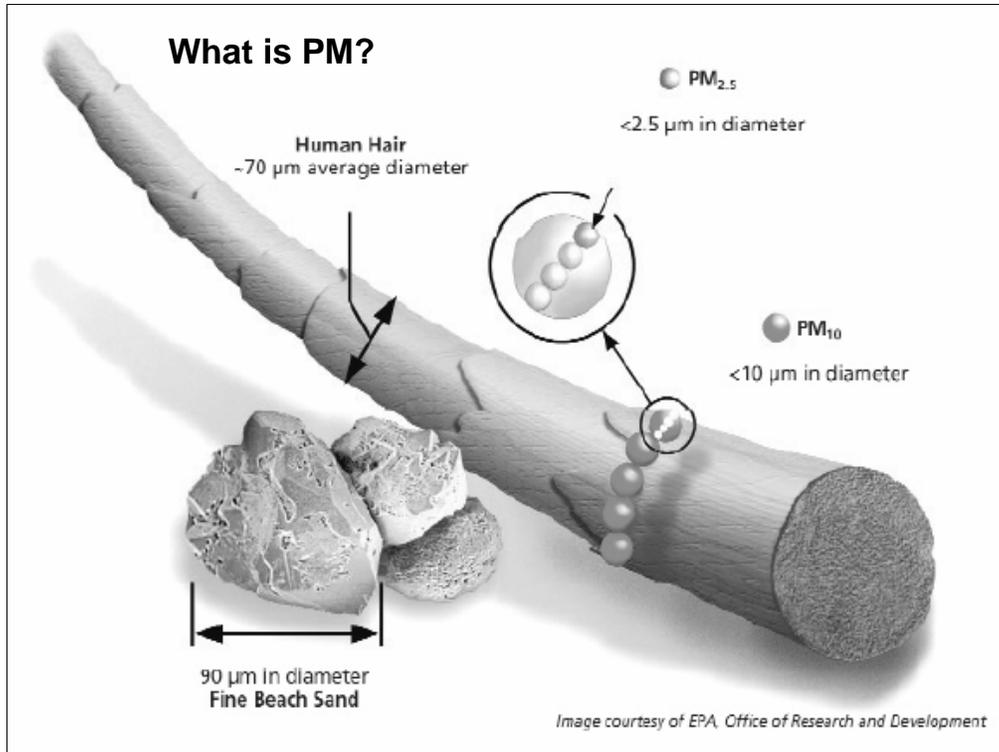
## **Section I: Introduction**

Section I provides an introduction and overview to the training. It includes background information on particulate matter, project-level conformity, hotspot analyses, and the 2006 Qualitative Guidance for PM Hotspot Analyses.

### **What is particulate matter?**

- Particulate matter is generic term for broad class of chemically and physically diverse substances that exist as discrete particles (liquid droplets or solids) over a wide range of sizes.
  
- Chemical and physical properties vary greatly with
  - Time
  - Region
  - Meteorology
  - Source category

A significant amount of information is available on particulate matter, including current scientific understanding, history of regulation, health effects, etc. Please refer to EPA's PM website for more information:  
<http://www.epa.gov/air/particlepollution/index.html>

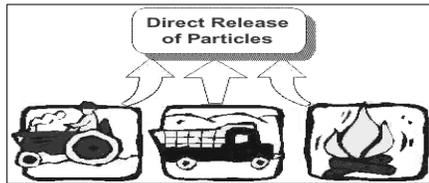


Particles come in a wide variety of sizes and have been historically assessed based on size, typically measured by the diameter of the particle in micrometers. PM<sub>10</sub> refers to particles that are 10 micrometers in diameter or less. PM<sub>2.5</sub> refers to particles that are 2.5 micrometers in diameter or less. (Note: a human hair is about 70 micrometers in diameter and a grain of sand is about 90 micrometers in diameter).

## How is PM<sub>2.5</sub> formed?

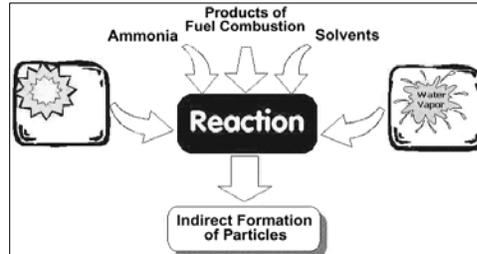
### Directly Emitted into the Air

- Cars, trucks, buses
- Power plants, factories
- Construction sites
- Tilled fields, paved and unpaved roads
- Wood burning



### Indirectly Formed

- Gases react to form particles



Common directly emitted fine particles include unburned carbon particles from combustion and particles emitted as combustion-related vapors that condense within seconds of being exhausted to ambient air. Combustion sources include motor vehicles, off-highway equipment, power generation facilities, industrial facilities, residential wood burning, and forest fires.

Particles can form by gas molecules coming together to form a new particle, gases condensing onto existing particles, bonding of particles into one larger particle, uptake of water, and gas phase reaction for form secondary PM.

### **When Are Project-Level Conformity Determinations Required?**

- Prior to the first time a Federal project is adopted, accepted, approved, or funded
  - Examples include:
    - NEPA Decision Document (CE, FONSI, ROD)
    - Right-of-Way Acquisition
    - Construction Authorization
  - Typically, project-level conformity is completed as part of the NEPA process (prior to adoption of CE, FONSI, ROD)

## **Is Project-level Conformity Ever Redetermined?**

### **Yes.**

**Project-level conformity must be redetermined if any of the following occur:**

- There is a significant change in design concept/scope
- More than 3 years have passed since the most recent major step to advance project
  - e.g., NEPA process completion, start of final design, acquisition of significant portion of right-of-way, and construction (including Federal approval of PS&E)
- Initiation of supplemental environmental document for air quality purposes

40 CFR 93.104(d)

### **General Requirements for Project-level Conformity Determinations**

- Use latest planning assumptions
- Use latest emissions model
- Include consultation
- Be part of a currently conforming long-range plan and TIP
- Include a hotspot analysis for any applicable pollutants (CO, PM)
- Comply with PM control measures in the applicable state implementation plan

For isolated rural areas, also:

- Project does not interfere with timely implementation of any transportation control measures in the applicable implementation plan
- Part of regional emissions analysis

Timely implementation of transportation control measures and regional emissions analysis are part of the transportation conformity requirements for metropolitan long-range Plans and Transportation Improvement Programs (TIP). Projects in isolated rural areas must also meet these two requirements.

### **What is a hot-spot analysis?**

- Definition: An estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standard (40 CFR 93.101).
- Assesses impacts on a smaller scale than the entire nonattainment or maintenance area
- Demonstrates that a transportation project meets Clean Air Act conformity requirements

## Final Rule & Guidance

- On March 10, 2006, EPA amended the Conformity Rule to address hotspot analysis requirements in PM nonattainment and maintenance areas.
- On March 29, 2006, EPA and FHWA released Qualitative PM Hotspot Analysis Guidance.
- This training presents information found in the guidance on how to implement the final rule.
- It does not in itself present new requirements. Please refer to the final rule as necessary.



The final rule can be found at  
<http://www.epa.gov/otaq/stateresources/transconf/index.htm>

## **EPA & FHWA Qualitative PM Hotspot Guidance**

**Issued March 2006; available at**

<http://www.fhwa.dot.gov/environment/conformity/pmhotspotguidmemo.htm>

### **Contents of Guidance:**

**Chapter 1: Introduction**

**Chapter 2: Overview of Transportation Conformity Requirements**

**Chapter 3: Analytical Requirements**

**Chapter 4: Developing a Qualitative PM<sub>2.5</sub> or PM<sub>10</sub> Hot-spot Analysis**

**Appendix A: Examples of Projects of Air Quality Concern**

**Appendix B: Examples of Qualitative PM<sub>2.5</sub> or PM<sub>10</sub> Hot-spot Analyses**

**Appendix C: Potential Mitigation Measures**