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# PM Ambient Methods Research ORD Carbon - Status Report

*P. Solomon*

US EPA/ORD Las Vegas, NV

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NERL

## ▶▶ General Areas

- ✓ OC and EC Methods Validation, Evaluation, Methods Optimization, and Standards
- ✓ OC Species Methods Development and Evaluation, Standards, and Measurements

## ▶▶ Groups Involved

- ✓ EPA - ORD & OAQPS Internal Efforts
- ✓ Supersites Program (Pittsburgh & Rutgers)
- ✓ NIST

## ▶▶ OC and EC Methods Validation, Evaluation, Methods Optimization, and Standards

### ✓ Methods Optimization:

- *Response Surface Study of the Thermal-Optical Method*
  - Paper Published by Conny et al.
    - IMPROVE Method He Temp Not High Enough
    - STN Method He Temp is Too High
  - New IAG to Continue Effort to Other Sample Types
    - Secondary OC (Atlanta), Wood Smoke (Seattle), Automotive (LA)

## ✓ Validation

- *Development of isotopic methods to validate the OC-to-EC cutpoint determined by thermal-optical analysis*
  - **Validate the accuracy of TOA protocols, to determine the interactivity of sample types, matrix effects, and operational variables, determine method limitations**

## ✓ Evaluation

- *Pittsburgh Supersites & Rutgers*
  - **Evaluate Differences Between STN and IMPROVE by Examining a Wide Range of Thermograms**
  - **Why Is There an Apparent Factor of 2 (Urban Areas) Between STN and IMPROVE Protocols When Analyzing the Same Filter, That Is NOT Present in the Network Comparison (6 Sites Study)**

✓ **Standards**

➤ *NITS 2784*

▪ **1649a Suspended and Deposited on Quartz Filters**

- Analyze by 4 Labs (2 - STN/EPA & NIST; 2 - IMPROVE/CARB & DIR)
- Three of 4 Labs Have Reported Results, 4<sup>th</sup> Lab Has Had Technical Problems and Filters Have Been Shipped To DRI for Analysis by their New Instrument (TOR & TOT)

▪ **Evaluate Filters for PAH**

➤ *Collection of Bulk PM for a New Reference Std In Baltimore, MD*

✓ **Measurements**

➤ *Diesel Emissions From Small Engines*

➤ *SNT-IMPROVE Methods Comparison Studies*

# OC Species

## ▶▶ OC Species Methods Development and Evaluation, Standards, and Measurements

### ✓ Standards

#### ➤ *Organic Aerosol Working Group*

#### ▪ **Intercomparison of Laboratory Methods for OC Species Used in Receptor Modeling**

- Completed Trials 1 & 2, Evaluation of Reference Materials Prepared By NIST (e.g., 1649a - Bulk, Extracts, Deposits on Filters)

#### ▪ **Preparing for Trial 3**

#### ➤ *NIST Development of Calibration and Internal Standards for OC Species Used in Receptor Modeling*

#### ➤ *Collection of Bulk PM for a New Reference Std In Baltimore, MD*

## ✓ **Methods Development and Evaluation**

### ➤ *Supersites Program Efforts: Sampling & Analysis*

- **Pittsburgh, Baltimore, Los Angeles, Houston, St. Louis**
- **Most Work In Conjunction With Receptor Modeling Needs**

### ➤ *NERL - In-House Efforts*

- **Identify and Quantify Polar Organic Aerosol Compounds**
  - ***Derivative-Based Organic Analysis Methods to determine the relative contributions of (1) Anthropogenic and biogenic compounds to secondary organic aerosol formation and (2) primary and secondary formations to the organic fraction of PM<sub>2.5</sub>.***

# OC Species

- ✓ **Measurements**
  - *Supersites Program Efforts for Receptor Modeling*
  - *NERL, Measurement of Polar Organic Species During SOS*
- ✓ **Participating in Preparation of 2004 International Organic Aerosol Speciation Workshop, April 5-7, Los Vegas, NV**

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#### ➤ *ORIA*

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