

Health effects of air pollution: focus on industrial sources

- *Top Priority:* Understanding which particle components – from which sources – are the most toxic
- Current world PM standards are based on broad size ranges: PM₁₀, PM_{2.5}, and PM_{10-2.5}
- Over long term, more specific standards could help
 - target those particles most likely to contribute to effects (e.g., narrower size range, specific chemical constituents)
 - affect fewer source types, enable industries to control specific PM components



Approaches to sorting out health effects of PM components

- Studies of ambient mixture:
 - epidemiologic studies can make use of regional and time differences in nature of PM
 - experimental studies with concentrated ambient PM (CAPS) from different regions
- Experimental studies using “model” particles of different sizes, composition to test hypotheses
- Experimental studies with exposures to PM from specific sources (coal fly ash, diesel PM), or whole emissions mixture



Major efforts under way or being planned

- **EPA's** new PM Centers' crosscutting theme: "linking health effects with PM from source categories and components"
- National Environmental Respiratory Center (**NERC**/Lovelace): effects of inhalation of different mixtures on variety of types of toxicity in animals, and characterization of mixture components
- Electric Power Research Institute (**EPRI**) conducting short-term epidemiology and toxicology studies in selected locations
- New systematic, multidisciplinary **HEI** Program to identify components and characteristics of PM associated with health effects



HEI Program: PM Components

- Created Web-accessible database of air pollutant information to facilitate research (hei.aer.com)
 - Contains levels of PM_{2.5} components and gaseous pollutants at and near sites in the EPA's PM_{2.5} Chemical Speciation Trends Network (STN) and State, Local and Tribal air monitoring stations (SLAMS)
- RFA 05-1: Studies to Compare Components and Characteristics of PM Associated with Health Effects
 - Comprehensive studies: combined epidemiology and toxicology in multiple locations across the US (two under negotiation)
 - Planning studies to assemble a multidisciplinary team, gather pilot data, and design a full study (one funded)
- Possible added RFA for comprehensive studies in 2007



Today's session

- Maria Morandi: Exposure to air pollution from industrial sources in the Houston area
- Andy Ghio: Toxicity of particles from Utah Valley during and after steel mill closure
- Ron Wyzga: Health effects of air pollution from power plants
- Arden Pope: Mortality effects of reduced sulfur oxide air pollution due to a copper smelting strike

