What Is Particle Pollution?

Particles found in the air are called particulate matter, or PM. Particulate matter is a complex mixture of small particles (dust, dirt, soot, smoke) and liquid droplets. Some particles are large or dark enough to be seen as soot or smoke. PM 2.5 refers to particulate matter 2.5 microns in diameter or smaller (fine particles). These microscopic particles, which are less than one-seventh the width of an average human hair, are believed to pose the greatest health risks. In contrast to ozone, PM 2.5 concentrations can be a threat to public health year-round.

Where does particle pollution come from?

Some particles are released into the air from a variety of sources, such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing and burning of wood.

Other particles may be indirectly formed when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants and in other industrial processes.

How does particle pollution affect health?

Breathing particulate matter can have numerous effects on human health. Because of their small size, fine particles can be inhaled deeply and accumulate in the respiratory system. Many health studies have linked increased exposure to PM 2.5 with increases in premature death and a range of serious respiratory and cardiovascular effects.

- Respiratory effects include aggravation of lung diseases, such as asthma and bronchitis, and decreased lung function. Other symptoms include coughing, chest discomfort, wheezing and shortness of breath.
- Cardiovascular symptoms include chest pain, palpitations, shortness of breath, heartbeat irregularities and heart attacks.
- PM exposure is associated with increased hospital admissions and emergency room visits for people with heart and lung diseases, and with work and school absences.
- Attaining the PM 2.5 standard nationally would avoid tens of thousands of premature deaths each year. Attainment could also prevent tens of thousands of hospital admissions, millions of work absences, and millions of respiratory illnesses in children each year.

Who is most at risk from exposure to particle pollution?

- PM exposure especially affects sensitive populations, such as children, older adults and people with heart and lung diseases, such as asthma and chronic obstructive pulmonary disease (COPD) (which includes chronic bronchitis and emphysema)
- It affects people with sensitive airways, where exposure to particle pollution can cause wheezing, coughing and respiratory irritation

How does particle pollution affect the environment?

Particulate matter can also have effects on aquatic life, vegetation and animals. Fine particulate matter adversely impacts visibility because it scatters and absorbs light. It is the major source of haze, which reduces visibility in many parts of the United States including national parks like the Great Smoky Mountains. Reducing fine particle concentrations will protect public health, improve visibility and benefit the tourism industry.

For more information on particle pollution and its health effects:

- U.S. Environmental Protection Agency:
  http://www.epa.gov/air/urbanair/pm/index.html
  www.epa.gov/iaq/asthma/images/asthma_fact_sheet_en.pdf
- U.S. Department of Health and Human Services, Centers for Disease Control
  http://www.cdc.gov/asthma/faqs.htm
- American Lung Association:
  http://lungaction.org/reports/sota04_heffects.html

www.cleanairtn.org

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