



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

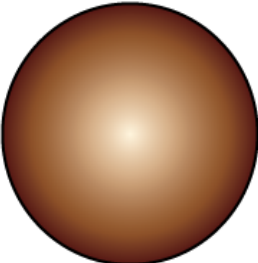


Air Quality: Particulate Matter (PM)

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| Name | Total Suspended Particle (TSP) | PM-10 | PM-2.5 |
|-----------------|---|--|---|
| Dates | 1970-1987 | 1983-Present | 2006-Present |
| |  |  |  |
| Regulated Size | 30µm | 10µm | 2.5µm |
| Daily Standard | 260 | 150 | 65 (1999-2005) 35 (2006-Present) |
| Annual Standard | 75 | 50 | 15 |

Description:

- Particulate matter (PM) is a complex mixture of small particles found in the air, including dust, dirt, soot, smoke and liquid droplets.
- Inhalable coarse particles (PM₁₀) are larger than 2.5 micrometers and smaller than 10 micrometers in diameter. Fine particles (PM_{2.5}) are 2.5 micrometers in diameter or smaller.
- Fine particles derive from many different sources, including industrial and residential combustion activities and vehicle exhaust, so their composition varies widely. Some particles are emitted directly into the air, such as from cars, trucks, buses, factories, construction sites, unpaved roads, stone crushing and wood burning. Other particles are formed in the air from the chemical change of gases. They are indirectly formed when gases from burning fuels react with sunlight and water vapor. These gases come from fuel combustion in motor vehicles, power plants and other industrial processes.
- The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS), for six (6) "criteria" pollutants, including PM_{2.5} and PM₁₀ to protect public health and the environment.

National Ambient Air Quality Standards for Particulate Matter:

- In September 2006, USEPA revised the NAAQS for particulate matter. PM_{2.5} levels must not exceed an average of 15 micrograms per cubic meter (µg/m³) of air each year for the annual standard and must not exceed an average of 35 µg/m³ in a 24-hour period for the 24-hour standard. PM₁₀ levels must not exceed 150 µg/m³ over twenty-four (24) hours.
 - USEPA is reconsidering the current 2006 standards, focusing on a range of 11-14 µg/m³ for the annual PM_{2.5} standard and a range of 30-35 µg/m³ for the 24-hour PM_{2.5} standard. A final decision is expected to be made in July of 2011.
- An area will only be designated as "nonattainment" when a monitor's design value exceeds the NAAQS. The design value for the annual PM_{2.5} standard is a three (3) year average of the annual means. The



design value for the 24-hour PM_{2.5} standard is the 98th percentile of 24-hour PM_{2.5} concentrations in a year, averaged over three (3) years.

- Based on ambient air quality data from 2007 through 2009, all Indiana counties measured air quality which met the annual and 24-hour standards for PM_{2.5}. No counties measured PM₁₀ levels above the standard.

Environmental Impacts:

- Particulate matter affects both human health and the environment, and unlike ozone, elevated levels can occur year-round.
- Fine particles are a major cause of reduced visibility and haze in parts of the U.S.
- Particulate matter can be carried long distances by the wind and can stain and damage stone and other materials, causing aesthetic damage to landmarks and municipal property.
- Fine particles are so small they can get deep into the lungs and cause health problems in sensitive groups, such as the very young, elderly, and those with heart or lung disease.
- Breathing particulate matter has been linked to a series of significant health problems, including:
 - Aggravated asthma.
 - Increased respiratory symptoms, such as wheezing, coughing, and difficult or painful breathing.
 - Chronic bronchitis.
 - Decreased lung function.
 - Premature death.

IDEM's Role:

- The Indiana Department of Environmental Management (IDEM) is responsible for protecting human health and the environment while providing for safe industrial, agricultural, commercial and governmental operations vital to a prosperous economy.
- IDEM's Office of Air Quality is responsible for protecting air quality in Indiana through the implementation of federal, regional and state control measures, regulations and ambient monitoring.
- Through air quality monitoring and forecasting, certain days are designated Air Quality Action Days for particulate matter to inform sensitive groups to avoid physical exertion, limit outdoor activities and stay indoors when possible. Air Quality Action Days for particulate matter can occur anytime of the year.
- For areas not achieving (attaining) the air quality standards for particulate matter, IDEM works to help communities implement programs to achieve the standards as quickly as possible.
 - IDEM submitted petitions to USEPA in mid-2008, requesting the following counties and townships be redesignated as attainment (meeting the annual PM_{2.5} standard): Lake, Porter, Hamilton, Marion, Hendricks, Morgan, Johnson, Warrick, Vanderburgh and Dubois counties, as well as Montgomery Township in Gibson County, Ohio Township in Spencer County and Washington Township in Pike County.
 - Air quality in Madison Township in Jefferson County, Clark and Floyd counties and Lawrenceburg Township in Dearborn County met the annual PM_{2.5} standard at the close of 2009. IDEM is currently in the process of preparing petitions for submission to USEPA requesting these areas be redesignated as attainment.

Citizen's Role:

- There are a number of actions every citizen can take to reduce their contribution to particulate matter pollution and improve overall air quality:
 - Avoid using leaf blowers and other dust-producing equipment.
 - Drive slowly on unpaved roads and other dirt surfaces.
 - Compost leaves, twigs, and other yard waste instead of burning them.
 - Avoid unnecessary burning of trash, vegetation, wood, and charcoal.
 - Keep automobiles properly maintained, including tire pressure.
 - Carpool, walk, bike or use public transportation when possible.
 - Reduce home energy consumption by turning off lights, televisions and other appliances when not in use to reduce emissions from energy production.

More Information:

- For information concerning National Ambient Air Quality Standards for PM_{2.5}, please visit IDEM's Web site at <http://in.gov/idem/5305.htm>.



- For information concerning Indiana's PM_{2.5} Air Monitoring Program, please visit IDEM's Web site at <http://www.in.gov/idem/4669.htm>.
- For daily regional forecasts of air quality for Indiana, please visit IDEM's SmogWatch Web site at <http://www.smogwatch.IN.gov>.
- For air quality questions and concerns, please call IDEM's Office of Air Quality at (317) 233-0178 or (800) 451-6027 extension 3-0178.

