



Glossary

Acid Deposition—a mixture of wet and dry deposition (deposited material) from the atmosphere containing higher than normal amounts of nitric and sulfuric acids

Acid Rain—see “Acid Deposition”.

Air Pollution—degradation of air quality resulting from unwanted chemicals or other materials occurring in the air

Air Quality—the properties and degree of purity of air to which people and natural and heritage resources are exposed

Air Quality Related Value (AQRV)—a resource that may be adversely affected by a change in air quality. "These values include visibility and those scenic, cultural, biological, and recreation resources of an area that are affected by air quality" (43 Fed. Reg. 15016).

Air Resource—anything that may be affected by a change in air quality. See “Air Quality Related Value”.

Ambient Monitoring—the systematic assessment of pollutant levels that is accomplished by measuring the types and amounts of certain pollutants (O₃, SO₂, PM_{2.5}, etc.) in outdoor air over time

Ammonium (NH₄⁺)—a reduced form of nitrogen most often indicative of agricultural emissions

Attainment Area—an area considered to have air quality as good as or better than the national ambient air quality standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others. See “Nonattainment Area”.

Best Available Retrofit Technology (BART)—means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and non air-quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

Biomagnification—the process by which certain metals and organic pollutants accumulate in muscle or fatty tissue of organisms and dramatically increase in concentration as they move up the food chain

Carbon Monoxide—a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels (e.g. gasoline, oil, and wood)

CASTNET—Clean Air Status and Trends Network. A national program to monitor ozone and deposition

Class I Area—as defined in the Clean Air Act, the following areas that were in existence as of August 7, 1977: national parks over 6,000 acres, national wilderness areas and national memorial parks over 5,000 acres, and international parks

Class II Area—areas of the country protected under the Clean Air Act, but identified for somewhat less stringent protection from air pollution damage than a Class I area, except in specified cases

Conformity—the requirement that park operations be consistent with state regulatory plans to attain or maintain air quality standards

Cooperative Ecosystem Study Unit (CESU)—a multi-agency and non-governmental organization (NGO) partnership with the nation's universities and other institutions. Participation in the CESUs enables the National Park Service to obtain high-quality science, usable knowledge for resource managers, responsive technical assistance, continuing education, and cost-effective research programs.

Critical Load—the quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge. This level is unique for each ecosystem and resource, depending on its sensitivity to air pollution.

Criteria Pollutant—a regulated air pollutant for which the EPA has established a national ambient air quality

standard. The Clean Air Act identifies six air pollutants for regulation: ozone, particulate matter, nitrogen oxides, sulfur dioxide, carbon monoxide, and lead.

Deposition Analysis Threshold (DAT)—the additional amount of nitrogen or sulfur deposition in a given area below which estimated impacts from a proposed new or modified source are considered insignificant

Dry Deposition—delivery of air pollutants in the gaseous or particle phase to surfaces

External Threat—a threat that originates outside the park boundary but impacts park resources

Fine particle—see “PM_{2.5}”.

GPMM—Gaseous Pollutant Monitoring Network . A network of air quality monitoring stations operated by the NPS Air Resources Division to monitor ozone and sulfur

Greenhouse Gas (GHG)—a gas such as water vapor (H₂O), carbon dioxide (CO₂), or methane (CH₄) which absorbs energy, slowing or preventing the loss of heat from Earth to space

Haze—a sufficient concentration of pollution, smoke, dust, and/or moisture suspended in the air to impair visibility

Heavy Metal—a metallic element with a high atomic weight (e.g. mercury, chromium, cadmium, arsenic, lead). Heavy metals can damage living things at low concentrations and tend to accumulate in the food chain.

IMPROVE—Interagency Monitoring of Protected Visual Environments. A collaborative monitoring program created to establish present visibility levels and trends, and identify sources of man-made impairment

Inhalable Coarse Particle—see “PM₁₀”.

Lead (Pb)—a heavy metal that is hazardous to health if breathed or swallowed. Its use in gasoline, paints, and plumbing compounds has been sharply restricted or eliminated by federal laws and regulations.

Mercury (Hg)—a naturally occurring element that is found in air, water and soil. It exists in several forms: elemental or metallic mercury, inorganic mercury compounds, and organic mercury compounds. Exposures to mercury can affect both human and wildlife health.

Methylation—the process of adding a methyl (-CH₃) group to a chemical compound. In the case of mercury, this process results in methylmercury.

Methylmercury (CH₃Hg)—the most toxic form of mercury. Methylmercury is bioavailable and accumulates in muscle tissue. Exposure to methylmercury is usually by ingestion, and it is absorbed more readily and excreted more slowly than other forms of mercury.

Mobile Source—a moving object that releases regulated air pollutants; mobile sources include cars, trucks, buses, planes, trains, motorcycles, and gas-powered lawn mowers. See also “stationary source”.

NADP—National Atmospheric Deposition Program. A cooperative effort between federal, state, tribal and local governmental agencies, educational institutions, private companies, and non-governmental agencies to monitor precipitation chemistry

National Ambient Air Quality Standards (NAAQS)—permissible levels of criteria air pollutants established to protect public health and welfare

National Emission Standard for Hazardous Air Pollutants (NESHAP)—a technology-based standard of performance prescribed for hazardous air pollutants from certain stationary source categories under Section 111 of the Clean Air Act

NEPA—the National Environmental Policy Act (42 USC § 4321-4370h)

New Source Performance Standard (NSPS)—an emission standard prescribed for criteria pollutants from certain stationary source categories under Section 111 of the Clean Air Act

Nitrate (NO₃-)—an oxidized form of nitrogen most often indicative of mobile source or power plant emissions

Nitrogen (N)—an element that is an essential plant nutrient, but which, in excess, may contribute to shifts in plant species, disruption of ecosystem processes, changes in fire frequency, and possible increases in insect and disease outbreaks

Nitrogen Oxides (NO_x)—a group of gases made up of nitrogen and oxygen that cause acid rain and other environmental problems, such as smog. Burning fossil fuels, such as coal and gasoline, releases NO_x into the atmosphere.

Nonattainment Area—a geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards. A single geographic area may have acceptable levels of one criteria air pollutant but unacceptable levels of one or more other criteria air pollutants; thus, an area can be both attainment and

nonattainment at the same time. It has been estimated that 60% of Americans live in nonattainment areas.

Ozone (O₃)—a molecule consisting of three oxygen atoms. High concentrations of ozone in the stratosphere shield the Earth against harmful rays from the sun, particularly ultraviolet B. Ground-level ozone, or tropospheric ozone, is a main component of smog. Ground-level ozone forms when NO_x and VOCs react in the atmosphere in the presence of sunlight.

Particulate Matter (PM)—particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Some particles are large or dark enough to be seen as soot or smoke. Others are so small that individually they can only be detected with an electron microscope.

PM₁₀—particulate matter less than 10 microns in diameter. PM₁₀ pose a health concern because they can be inhaled into and accumulate in the respiratory system.

PM_{2.5}—particulate matter less than 2.5 microns in diameter. Because of their small size (approximately 1/30th the average width of a human hair), fine particles can lodge deeply into the lungs, and are believed to pose the greatest health risks.

Prevention of Significant Deterioration Program—a program created in the Clean Air Act Amendments of 1977 to

- protect public health and welfare
- preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value
- insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources, and
- assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process.

Primary Particle—a solid particle emitted directly into the atmosphere, for example smoke, dust, or soil

Primary Standard—an ambient air quality standard designed to protect human health with an adequate margin for safety

RAWS—Remote Automatic Weather Stations. A network of nearly 2,200 interagency stations that monitor the weather and provide weather data that assists land management agencies with a variety of projects such as monitoring air quality, rating fire danger, and providing information for research applications

Regional Haze Plan—see “State Implementation Plan”.

Regional Haze Rule—a 1999 rule that requires states to coordinate with the EPA, the National Park Service, the US Fish and Wildlife Service, the US Forest Service and other interested parties to develop and implement air quality protection plans to reduce the pollution that causes visibility impairment in Class I areas

Scenic Resource— a location or area that is recognized and enjoyed for its visual and scenic qualities and whose features, views, patterns, and characteristics contribute to a distinct sense of appreciation of the natural and cultural environment

Secondary Standard—an air pollution limit based on environmental effects such as damage to AQRVs like plants, visibility, etc. Secondary standards are set for criteria air pollutants.

Sensitive Groups—populations including asthmatics, individuals with bronchitis or emphysema, children, and the elderly, who are particularly susceptible to difficulty breathing and the aggravation of existing respiratory and cardiovascular disease as a result of air pollution

State Implementation Plan (SIP)—a detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. State implementation plans are collections of the regulations used by a state to reduce air pollution. The Clean Air Act requires that EPA approve each state implementation plan. Members of the public are given opportunities to participate in review and approval of state implementation plans.

Stationary Source—any building, structure, facility, or installation which emits or may emit any air pollutant

Sulfate (SO₄²⁻)—a type of particle formed in the atmosphere when gaseous sulfur dioxide interacts with other oxidants

Sulfur Dioxide (SO₂)—a gas produced by burning coal, most notably in power plants, and by industrial processes, such as production of paper and smelting of metals. Sulfur dioxide plays an important role in the production of acid rain.

Toxic Compound—one of a suite of contaminants that includes mercury and pesticides. These contaminants can accumulate in organisms (e.g., in lipids, muscles, organs) to levels that are harmful to ecosystem and human health.

Viewshed—the total landscape seen or potentially seen from a point, or from all or a logical part of a travel route, use area, or water body

Visibility—the ability to see colors and details in distant views

Vital Signs Monitoring—long-term monitoring conducted by the NPS Inventory and Monitoring (I & M) program to track a subset of physical, chemical, and biological elements and processes of park ecosystems that are selected to represent the overall health or condition of park resources, known or hypothesized effects of stressors, or elements that have important human values

Volatile Organic Compound (VOC)—an organic chemical compound whose composition and physical properties make it possible for it to evaporate or sublime under normal atmospheric conditions of temperature and pressure. VOCs in the atmosphere result from both human caused and natural processes. Human caused VOCs can result from a number of sources including paint strippers, pesticides, glues, and adhesives. There may be a relationship between elevated levels of methane and VOCs in areas with expanding natural gas development.

Wet Deposition—delivery of air pollutants in the aqueous phase to surfaces (via rain, snow, clouds, or fog)