



Glossary of Air Quality Terms and Acronyms

AFV	Alternative fueled vehicle
EAC	Early Action Compact
E85	Ethanol (85% ethanol mixed with 15% gasoline)
HDDV	Heavy-duty diesel vehicles
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NO_x	Nitrogen oxides
O₃	Ground-level ozone
PM_{2.5}	Very fine particles
SIP	State implementation plan
SO₂	Sulfur dioxide
TCM	Transportation control measures
VMT	Vehicle miles traveled
VOC	Volatile organic compounds

Alternative fuels—Substantially non-petroleum fuels that yield energy security and environmental benefits, including methanol, ethanol, and other alcohols; blends of 85% or more of alcohol with gasoline; natural gas and liquid fuels domestically produced from natural gas; liquefied petroleum gas (propane); coal-derived liquid fuels; hydrogen; electricity; and biodiesel.

Biodiesel (B20)—Biodiesel is a cleaner-burning diesel replacement fuel made from natural, renewable sources such as new and used vegetable oils and animal fats. Blends of up to 20% biodiesel (mixed with petroleum diesel fuels) can be used in nearly all diesel equipment and are compatible with most storage and distribution equipment.

Criteria air pollutants—A group of very common air pollutants regulated by EPA on the basis of health and/or environmental effects of pollution. EPA has set national air quality standards for six principal pollutants (referred to as "criteria" pollutants): carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂).

Early Action Compact (EAC)—A voluntary agreement with local governments, the business community and citizens with the state and EPA. Counties participating in Early Action Compacts agree to adopt local control measures to reduce formation of ozone and achieve the federal ozone health standard ahead of federal deadlines.

Ethanol (E85)—Ethanol is an alcohol-based alternative fuel produced by fermenting and distilling starch crops that have been converted into simple sugars. Feedstocks for this fuel include corn, barley and wheat. Ethanol is most commonly used to increase octane and improve the emissions quality of gasoline. Ethanol can be blended with gasoline to form an E85 blend (85% ethanol and 15% gasoline). Original equipment manufacturers produce flexible-fuel vehicles that can run on E85 or any other combination of ethanol and gasoline.

I/M program—Inspection and maintenance program. Periodic automobile emission inspection programs are required in some areas to reduce pollution from automobile exhaust. In Tennessee, these inspections are typically required before license tag renewals are issued.

Mobile sources—Moving objects that release pollution. Mobile sources are divided into two groups: on-road vehicles (e.g., cars, trucks, buses) and non-road vehicles (e.g., construction equipment, trains, airplanes, lawn mowers).

National Ambient Air Quality Standards (NAAQS)—The Clean Air Act established two types of national air quality standards. "Primary" standards are designed to establish limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. "Secondary" air quality standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation and buildings.

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Nitrogen oxides (NO_x)—A group of highly reactive gases that react with volatile organic compounds to form ground-level ozone. NO_x is produced from burning fuels, including gasoline and coal. Nitrogen dioxide is a criteria air pollutant.

Nonattainment area—A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards.

Offset—A restriction imposed on new or existing industry in a nonattainment area. If the owner of a source wishes to increase the release of a criteria air pollutant, an offset (reduction of a somewhat greater amount of the same pollutant) must be obtained either at the same plant or by purchasing offsets from another company.

Ozone (O₃)—A criteria air pollutant. Stratospheric ozone shields the Earth against harmful rays from the sun, particularly ultraviolet B. Ground-level ozone is a product of reactions among chemicals produced by burning coal, gasoline and other fuels, and chemicals found in products such as solvents, paints, hairsprays, etc.

Ozone health standard—Under the federal Clean Air Act, EPA has set protective health-based standards for ozone in the air we breathe. The new National Ambient Air Quality Standard (NAAQS) for ozone is more stringent than the previous standard.

- Old standard: 120 parts per billion (ppb). Referred to as the 1-hour standard because it applies to 1-hour peak readings of ozone.
- New standard: 80 ppb. Referred to as the 8-hour standard because measurements are averaged over an 8-hour period. Because of rounding, ozone levels of 84 ppb and below are acceptable, while levels at 85 ppb or higher exceed the standard.

Compliance with the 1-hour standard is determined by looking at the number of days where ozone levels exceed 124 ppb during a three-year period. The 8-hour standard looks at an average of the fourth highest 8-hour average concentration in each of three consecutive years to see if that number (the ozone design value) exceeds 84 ppb.

In practice, the 8-hour standard is somewhat more difficult to achieve. EPA is phasing out the one-hour standard.

Particulates or particulate matter (PM_{2.5})—A criteria air pollutant. Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. Some particles

are large or dark enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. These particles come in a wide range of sizes—"fine" particles are less than 2.5 micrometers in diameter and coarser-size particles are larger than 2.5 micrometers. They can originate from many different stationary and mobile sources as well as from natural sources. Fine particles (PM_{2.5}) result from fuel combustion from motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves. Coarse particles (PM₁₀) are generally emitted from sources, such as vehicles traveling on unpaved roads, materials handling, and crushing and grinding operations, as well as windblown dust. Some particles are emitted directly from their sources, such as smokestacks and cars. In other cases, gases such as sulfur oxide and SO₂, NO_x, and VOC interact with other compounds in the air to form fine particles. Their chemical and physical compositions vary depending on location, time of year, and weather.

EPA set new national ambient air quality standards (NAAQS) for particulate matter in 1997. EPA added two new PM_{2.5} standards, set at 15 micrograms per cubic meter (µGA) and 65 µg/m³, respectively, for the annual and 24-hour standards. In December 2004, EPA will designate areas as nonattainment that do not meet the new PM_{2.5} standards based on the last three years of monitoring data.

State implementation plan (SIP)—A detailed description of the programs a state will use to carry out its responsibilities under the federal Clean Air Act. EPA must approve each state's SIP.

Stationary source—A place or object from which pollutants are released and which does not move around. Stationary sources include power plants, gas stations, incinerators, houses, etc.

Sulfur dioxide (SO₂)—A criteria air pollutant produced by burning coal, most notably in power plants and some industrial processes. Sulfur dioxide is closely related to sulfuric acid, a strong acid.

Transportation conformity—Ensures that transportation activities are consistent with air quality goals through technical modeling analyses that demonstrate whether the total air emissions of a transportation plan or program are within the emission "budgets" established by formal air quality plans (State Implementation Plan or SIP). The primary purpose of conformity is to ensure that transportation projects do not make air quality worse.

Volatile organic compounds (VOC)—Volatile organic chemicals include gasoline, industrial chemicals such as benzene, solvents such as toluene and xylene, and tetrachloroethylene (perchloroethylene, the principal dry cleaning solvent). Many volatile organic chemicals are also hazardous air pollutants; for example, benzene causes cancer.

Vehicle Miles Traveled (VMT)—The total number of miles traveled in a given period of time (e.g., day, year) by a given vehicle or fleet of vehicles. VMT, combined with pollution rates per mile traveled, provide an estimate of the total amount of vehicle pollution in a given period. Since motor vehicles are the largest contributor to local air pollution, reducing VMT is a high priority. Across the country, VMT has been growing at a rate faster than population growth.

Source: Much of this information is taken from the "The Plain English Guide to the Clean Air Act," U.S. Environmental Protection Agency
www.epa.gov/oar/oaqps/peg_caa/pegcaain.html