

# Appendix C

## **Glossary and Acronyms**





# Glossary and Acronyms

## Glossary

### A

**Abscissa.** The X-axis on a graph.

**Absolute Filter.** A filter or filter medium of ultra-high collection efficiency for very small particles (submicrometer size), so that essentially all particles of interest or of concern are collected. Commonly, the efficiency is 99.95% or higher for a standard aerosol of 0.3  $\mu\text{m}$  diameter.

**Absolute Pressure.** A pressure scale that starts with a value of zero for an absolute vacuum.

**Absolute Temperature.** A temperature scale that starts with zero at absolute zero temperature.

**Absolute Zero Temperature.** The temperature at which molecular kinetic energy is negligible.

**Absorption.** The transfer of molecules from the bulk of the gas to a liquid surface, followed by diffusion of these molecules to the bulk of the liquid.

**ACFM.** The acronym for actual cubic feet per minute, which is the actual gas flow rate expressed in the American Engineering system of units. ACFM is a measure of the volume of gas that passes a given point during a one-minute period.

**Accuracy.** A measure of the closeness of an individual measurement or the average of a number of measurements to the true value. Accuracy includes a combination of random error (precision) and systematic error (bias) components that are due to sampling and analytical operations; the EPA recommends using the terms "*precision*" and "*bias*" rather than "accuracy," to convey the information usually associated with accuracy (see Bias).

**Acute Exposure.** One dose (or exposure) or multiple doses (or exposures) occurring within a short time relative to the life of a person or other organism (e.g., approximately 24 hours or less for humans).

**Adsorbs.** The adhesion of a substance to the surface of a solid or liquid.

**Adsorption.** The process whereby vapor phase compounds in the gas stream pass through a bed or layer of highly porous material (adsorbent). The vapor phase compounds diffuse to the surface of the adsorbent and are retained due to weak attractive forces.

**Aerodynamic Diameter (a.d.).** The diameter of a unit density sphere having the same terminal settling velocity as the particle in question. Operationally, the size of a particle as measured by an inertial device.

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**Aerodynamic Diameter.** The diameter of a spherical particle having a density of 1 gm/cm<sup>3</sup> that has the same inertial properties (i.e. settling velocity) in the gas as the particle of interest.

**Aerosol.** Suspended solid or liquid particles in the atmosphere.

**Air at EPA Standard Conditions.** Air at 25°C and 760 mm Hg (29.92 in. Hg).

**Air Pollution.** The presence of unwanted material in the air. The term "unwanted material" here refers to material concentrations present for a sufficient time and under such circumstances as to interfere significantly with comfort, health, or welfare of persons, or with the full use and enjoyment of property.

**Air Toxic.** Any air pollutant that causes or may cause cancer, respiratory, cardiovascular, or developmental effects, reproductive dysfunctions, neurological disorders, heritable gene mutations, or other serious or irreversible chronic or acute health effects in humans. See "Hazardous Air Pollutant."

**Ambient Measurement.** A measurement (usually of the concentration of a chemical or pollutant) taken in an ambient medium, normally with the intent of relating the measured value to the exposure of an organism that contacts that medium.

**Anion.** An atom or molecule with a negative charge.

**Approved Regional Method (ARM).** A continuous PM<sub>2.5</sub> method that has been approved specifically within a state or local air monitoring network for purposes of comparison to EPA's National Ambient Air Quality Standards (NAAQS) and to meet other monitoring objectives.

**Aqueous Liquid.** A liquid whose main component is water, but which can also contain significant concentrations of other dissolved solids and liquids (usually <15% by weight) and/or low-to-moderate levels of suspended solids (usually <2% by weight).

**Area Source (in the context of the Clean Air Act, Air Toxics Provisions).** Any stationary source that falls below a major source threshold of emissions (see "Major Source,"), such as a dry cleaner or gas station. The term generally excludes motor vehicles (both road and nonroad).

**Aspirator.** Any apparatus, such as a squeeze bulb, fan, pump, or venturi, that produces a movement of a fluid by suction.

**Atmosphere, The.** The whole mass of air surrounding the earth, composed largely of oxygen and nitrogen.

**Atmosphere, An.** A specific gaseous mass, occurring either naturally or artificially, containing any number of constituents and in any proportion.

**Attainment Area.** An area that meets the air quality standard for a criteria pollutant (under NAAQS).

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**Audit (quality).** A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements, and whether these arrangements are implemented effectively and are suitable to achieve objectives.

## B

**Background Levels.** Two types of background levels may exist for chemical substances: (a) naturally occurring levels, or ambient concentrations of substances present in the environment without human influence; and (b) anthropogenic levels, or concentrations of substances present in the environment due to human-made, non-site sources (e.g., automobiles, industries) [IRIS, 1999: Glossary of IRIS Terms].

**Baghouse.** This term is often used interchangeably with the term “filtration systems.” However, it is applicable only to pulse jet, cartridge, reverse air, and shaker-type filtration systems. The term “baghouse” does not have any clear meaning for HEPA filtration systems.

**Barometric Pressure.** The total pressure exerted by the atmosphere. This term is synonymous with “atmospheric pressure.”

**Bias.** The systematic or persistent distortion of a measurement process that causes errors in one direction (i.e., the expected sample measurement is different from the sample’s true value).

**Bottom Ash.** Incombustible matter resulting from combustion that does not leave as fly ash.

**Brake Horsepower.** The horsepower required to drive a fan. This includes the energy losses in the fan but does not include the drive losses between motor and fan.

**Breathing Zone.** The location in the atmosphere where persons breathe.

**Brownian Diffusion.** The slight deflection of very small particles in a gas stream that occurs when rapidly moving gas molecules strike them.

**BTU (British Thermal Unit).** The quantity of heat that must be transferred to a one pound mass of water to raise the temperature by 1°F.

## C

**Calibration.** The process of comparing a standard or instrument with one of greater accuracy (small uncertainty) to obtain quantitative estimates of the actual values of the standard being calibrated, the deviation of the actual value from a nominal value, or the difference between the value indicated by an instrument and the actual value.

**Calibration Standards.** Devices that are specifically designed to be placed in a monitoring location and can be used to calibrate air monitoring instruments. These devices are commercially available from a number of vendors. These units usually are permeation devices or mass flow calibrators (MFC). The flow rates of these devices are verified by the transfer standard on a set schedule.

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**Cancer.** A disease of heritable, somatic mutations affecting cell growth and differentiation, characterized by abnormal, uncontrolled growth of cells.

**Carbon Bed Adsorber.** An air pollution control system that is used to collect and concentrate organic compounds on an activated carbon adsorbent.

**Cascade Impactor.** A sampling device used to determine the particle size distribution. Particles are separated and deposited on a series of stages that correspond to different aerodynamic diameters.

**Catalyst.** A substance, usually present in small amounts compared to the reactants, that speeds up the chemical reaction rate without being consumed in the process.

**Catalytic Oxidizer.** An air pollution control device that uses a catalyst to accelerate the oxidation reaction at lower temperatures than possible in gas phase thermal oxidation.

**Certification.** A certification is the process of checking a transfer standard against a primary standard and establishing a mathematical relationship that is used to adjust the transfer standard values back to the primary standard.

**Chemical Abstracts Service Registry Number (CAS No.).** A unique, chemical-specific number used in identifying a substance. The registry numbers are assigned by the Chemical Abstract Service, a division of the American Chemical Society.

**Chimney Effect.** A phenomenon consisting of a vertical movement of a localized mass of air or other gases due to temperature/pressure differences.

**Chronic Exposure.** Multiple exposures occurring over an extended period of time, or a significant fraction of the animal's or the individual's lifetime.

**Class I Areas.** Class I areas are protected by the PSD program and include national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historical value.

**Class II Areas.** Attainment areas that are neither industrialized nor meet the specific requirements for classification as Class I areas. They are protected by the PSD program.

**Class III Areas.** Industrialized attainment areas. They are protected by the PSD program.

**Cloud.** A visible dispersion occupying a discrete portion of space, with apparent boundaries.

**Coarse Particles.** EPA classification of particles having aerodynamic diameters ranging from 2.5 to 10 $\mu\text{m}$  (PM<sub>10-2.5</sub>)

**Collection Efficiency.** A ratio of pollutants entering a control device versus pollutants leaving the device expressed as a percent.

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**Collector.** A device for removing and retaining contaminants from air or other gases. Usually this term is applied to cleaning devices in exhaust systems.

**Collocated Samples.** Two or more portions collected at the same point in time and space so as to be considered identical. These samples are also known as field replicates and should be identified as such.

**Combustion.** The production of heat and light energy through a chemical process, usually oxidation. Products of complete combustion include water and carbon dioxide, while incomplete combustion can yield partially oxidized organic compounds and carbon monoxide. Factors that promote complete combustion include the proper fuel-air ratio, temperature range, and adequate amount of time for the fuel and its by-products to complete the combustion reactions.

**Condensable Particulate Matter.** Particulate matter, contained almost entirely within the PM<sub>2.5</sub> classification, that forms from condensing gases or vapors. It forms by chemical reactions as well as by physical phenomena.

**Condensate.** Liquid or solid matter formed by condensation from the vapor phase. In sampling, the term is applied to the components of an atmosphere that have been isolated by simple cooling.

**Condensation.** The process of converting a material in the gaseous phase to a liquid or solid state by decreasing temperature, increasing pressure, or both. Usually in air sampling only cooling is used.

**Condenser.** A simple, relatively inexpensive device that normally uses water or air to cool and condense a vapor stream.

**Condensoid.** The particles of a dispersion formed by condensation.

**Conductivity.** A measure of the ability of a material to conduct an electric charge.

**Conservation of Matter.** A general principle of non-nuclear reactions and processes where matter is neither created nor destroyed.

**Contaminant.** Unwanted material.

**Count Median Size.** A measurement of particle size for samples of particulate matter, consisting of that diameter of particle such that one half of the number of particles is larger and half is smaller.

**Criteria Air Pollutant.** One of six common air pollutants determined to be hazardous to human health and regulated under the EPA's National Ambient Air Quality Standards (NAAQS). The six criteria air pollutants are carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter. The term "criteria pollutants" derives from the requirement that the EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on the basis of these criteria that standards are set or revised.

**Cryogenic Sampling.** See Sampling, Condensation.

**Cyclonic Separator.** A mechanical collector that uses centrifugal force to drive particles to the wall

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of the device.

## D

**Dalton's Law of Partial Pressures.** The law stating that the total pressure of a gas is the sum of the pressures exerted by each component gas.

**Data Acquisition System.** A strip chart recorder, analog computer, or digital computer for recording measurement data from the analyzer output.

**Data Quality Objectives (DQOs).** The qualitative and quantitative statements derived from the DQO Process that clarify a study's technical and quality objectives, define the appropriate type of data, and specify tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions.

**Density.** The quantity of mass contained in a specific volume.

**Denuder.** A device designed to remove gases from an air sampling stream by the process of molecular diffusion to a collecting surface.

**Desorption.** The process of using low pressure steam or hot nitrogen gas to remove compounds from an adsorbent bed.

**Dew Point.** The temperature at which the partial pressure of a substance (in vapor form) equals the equilibrium vapor pressure of the substance. At this temperature, a vapor begins to condense at a constant pressure.

**Differential Pressure Meter.** Any flow measuring device that operates by restricting air flow and measuring the pressure drop across the restriction.

**Diffusion.** The random motion of small particles suspended in a gas or liquid, also known as Brownian Movement. It can also be described as a process by which the molecules of two or more substances gradually mix.

**Diffusivity.** Measure of the extent to which very small particles are influenced by molecular collisions which cause the particles to move in a random manner across the direction of gas flow.

**Dimensions.** Units of measure used to express the magnitude of mass, distance, force, and time.

**Dimensional Calculations.** A form of mathematical calculation in which the units applying to each value are stated explicitly and are handled algebraically.

**Dispersion.** The most general term for a system consisting of particulate matter suspended in air or other gases.

**Dispersoid.** The particles of a dispersion.

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**Diurnal.** Recurring daily. Applied to (variations in concentration of) air contaminants, diurnal indicates variations following a distinctive pattern and recurring from day to day.

**Dose-response assessment.** A determination of the relationship between the magnitude of an administered, applied, or internal dose and a specific biological response. Response can be expressed as measured or observed incidence, percent response in groups of subjects (or populations), or as the probability of occurrence within a population [IRIS, 1999: Glossary of IRIS Terms].

**Droplet.** A small liquid particle of such size and density as to fall under still conditions, but which may remain suspended under turbulent conditions.

**Dry Scrubber.** An air pollution control device used to remove an acid gas pollutant from a gas stream. The pollutant is collected on or in a solid or liquid material, which is injected into the gas stream. A dry scrubber produces a dry product that must be collected downstream from this control device.

**Dust.** A loose term applied to solid particles predominantly larger than colloidal and capable of temporary suspension in air or other gases. Dusts do not tend to flocculate except under electrostatic forces; they do not diffuse but settle under the influence of gravity. Derivation from larger masses through the application of physical force is usually implied.

**Dust Fall.** See Particle Fall.

**Dust Loading.** An engineering term for "dust concentration," usually applied to the contents of collection ducts and the emission from stacks.

## E

**Ecological Risk Assessment.** A process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors. Stressors are defined as any chemical, biological, or physical entity that can induce an adverse response on ecological individuals, populations, communities, or ecosystems.

**Efficiency.** The ratio of attained performance to absolute performance, commonly expressed in percent.

**Efficiency, Fractional.** The mean collection efficiency for specific size fractions of a contaminant. Commonly this term has been applied to the performance of air cleaning equipment toward particulate matter in various size ranges.

**Ejector.** A device that uses a fluid under pressure, such as steam, air, or water, to move another fluid by developing suction. Suction is developed by discharging the fluid under pressure through a venturi.

**Electrostatic Attraction.** An affinity or attraction between oppositely charged particles and/or

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collection media.

**Electrostatic Precipitator.** A type of air pollution control system that uses high voltage fields to electrically charge and collect particulate matter. The charged particles approach an electrically grounded collection plate and accumulate as a dust layer, which is partially removed by mechanical rapping (hammers) on a routine basis.

**Emissions.** The total of substances discharged into the air from a stack, vent, or other discrete source.

**Emission Mixture.** The total mixture in the outside atmosphere of emission from all sources.

**Emission Sampling Train.** Equipment usually consisting of (1) a sampling nozzle and probe, (2) filter and impingers for collection of gaseous and/or particulate components, (3) flow meter and flow regulation devices, and (4) a vacuum pump for collecting a representative sample of a gas stream.

**Entrainment.** The process in which material, such as water droplets or particulate matter, is picked up and carried along by a gas or liquid stream.

**Entry Loss.** The loss of pressure that occurs when airflow moves into a system.

**Equilibrium.** A steady state condition. The amount of mass transferred in one direction is exactly balanced by the amount of mass transferred in the reverse direction.

**Evaporative Cooling Tower.** Equipment used to reduce the temperature of a gas stream. Fine droplets, injected into a vessel, are evaporated as they absorb heat from the gas stream.

**Exposure.** Contact made between a chemical, physical, or biological agent and the outer boundary of an organism. Exposure is quantified as the amount of an agent available at the exchange boundaries of the organism (e.g., skin, lungs, gut).

**Exposure Assessment.** An identification and evaluation of the human population exposed to a toxic agent, describing its composition and size, as well as the type magnitude, frequency, route and duration of exposure.

## F

**Fabric Filter.** A filtration device using one or more filter bags, sheets, or panels to remove particles from a gas stream.

**Fan Drive.** The way in which the motor shaft is linked to the fan wheel to transmit power and control speed.

**Federal Equivalent Method.** A method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with 40 CFR Part 53.

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**Federal Reference Method.** A method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to 40 CFR Part 50.

**Fine Particles.** EPA classification of particles having aerodynamic diameters greater than 0.1 micrometer and less than or equal to 2.5 micrometers.

**Flocculation.** Synonymous with agglomeration.

**Flowmeter.** An instrument for measuring the rate of flow of a fluid moving through a pipe or duct system. The instrument is calibrated to give volume or mass rate of flow.

**Flow Rate (Actual).** The volume of gas moving through a system or stack per unit time expressed at actual conditions of temperature and pressure.

**Flow Rate (Standard).** The volume of gas moving through a system or stack per unit time expressed at standard conditions of temperature and pressure.

**Flow Rate (Volumetric).** The volume of gas moving through a ventilation system, stack, or air pollution control system per unit time.

**Fly Ash.** Uncombusted particulate matter in the combustion gases resulting from the burning of coal and other material.

**Fog.** A loose term applied to visible aerosols in which the dispersed phase is liquid. Formation by condensation is usually implied; in meteorology, a dispersion of water or ice.

**Force.** An influence on a physical object that causes a change in movement and/or shape.

**Freezing Out.** See Sampling, Condensation.

**Fugitive Emissions.** Emissions that escape from industrial processes and equipment.

**Fume.** Properly, the solid particles generated by condensation from the gaseous state, generally after volatilization from melted substances, and often accompanied by a chemical reaction such as oxidation. Fumes flocculate and sometimes coalesce. Popularly, the term is used in reference to any of all types of contaminant, and in many laws or regulations, with the added qualification that the contaminant has some unwanted action.

## G

**Gas.** One of the three states of aggregation of matter, having neither independent shape nor volume and tending to expand indefinitely.

**Gauge Pressure.** The relative pressure inside a vessel or container (the difference between the inside pressure and atmospheric pressure).

**Grab Sample.** See Sampling, Instantaneous.

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**Gravimetry/Gravimetric.** A weight-based measurement.

**Gravitational settling/sedimentation.** A process by which suspended particles in air settle to the bottom.

## H

**Hazardous Air Pollutants.** See Air Toxics.

**Heterogeneous Nucleation.** The accumulation of material from the vapor phase onto an existing particle.

**High-Volume Air Sampler (Hi-Vol).** A device for sampling large volumes of an atmosphere for collecting the contained particulate matter by filtration. Consists of a high-capacity blower, a filter to collect suspended particles, and a means for measuring the flow rate.

**Homogeneous Nucleation.** The formation of a particle from the vapor phase involving only one compound.

**Hood.** A shaped inlet designed to capture contaminated air and conduct it into the exhaust duct system.

**Hood Capture Velocity.** The air velocity at any point in front of the hood or at the hood opening necessary to overcome opposing air currents and to capture the contaminated air at that point by pulling it into the hood.

**Human Health Inhalation Assessment.** A process that evaluates the likelihood of an adverse impact of a chemical or group of chemicals on human health for people that are exposed through the inhalation of the chemical(s). Inhalation can be defined as drawing of air (and pollutants) into the lungs via the nasal or oral respiratory passages.

**Human Health Multipathway Assessment.** A process that evaluates the likelihood of an adverse impact of a chemical or group of chemicals on human health for people that are exposed through multiple exposure pathways. These pathways could include inhaling the chemical(s), eating food that the chemical(s) has deposited on, accidentally eating dirt or dust that contains the chemical(s), or skin contact with dirt or water that contains the chemical(s).

**Hydrometer.** An instrument for measuring the specific weight of a liquid by utilizing the principle of buoyancy.

**Hygroscopic.** Characterized by readily absorbing moisture.

## I

**Impaction.** A forcible contact of particles of matter. A term often used synonymously with

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impingement.

**Impactor.** A sampling device that employs the principle of impaction (impingement).

**Impingement.** The act of bringing matter forcibly in contact. When used in air sampling, refers to a process for the collection of particulate matter in which the gas being sampled is directed forcibly against a surface.

**Impingement (Dry).** The process of impingement carried out so that particulate matter carried in the gas stream is retained upon the surface against which the stream is directed. The collecting surface may be treated with a film of adhesive.

**Impingement (Wet).** The process of impingement carried out within a body of liquid, the latter serving to retain the particulate matter.

**Impinger.** Broadly, a sampling instrument employing impingement for the collection of particulate matter. Commonly, this term is applied to specific instruments, the “midget” and “standard” impinger.

**Impinger, Midget.** A specific instrument employing wet impingement, using a liquid volume of 10 ml and a gas flow of 0.1 cu. ft. per minute.

**Impinger, Standard.** A specific instrument employing wet impingement, using a liquid volume of 75 ml and a gas flow of 1 cu. ft. per minute (e.g. Greenberg-Smith Impinger).

**Individual Exposure or Risk Assessment.** A process that evaluates the likelihood of an adverse impact on human health (risk), or amount of exposure, of a chemical or group of chemicals for an actual or hypothetical person.

**Inertial Impaction.** The process whereby a particle moving in a gas stream strikes slowly moving or stationary obstacles or targets (e.g. liquid droplets) directly in its path. Compare with Interception.

**Inhalable Particles.** Particles with aerodynamic diameters of  $<10 \mu\text{m}$  that are capable of being inhaled into the human lung.

**Inorganic.** A term that applies to compounds that contain no carbon-hydrogen bonds.

**Interception.** The process whereby a particle moving in a gas stream is offset slightly from directly impacting a moving or stationary obstacle or target. As the particle tries to move past the obstacle, the obstacle intercepts (and collects) the particle. Compare with Inertial Impaction.

**Interference.** An undesired positive or negative output caused by a substance other than the one being measured.

**Isokinetic.** A term describing a condition of sampling in which the flow of gas into the sampling device (at the opening or face of the inlet) has the same flow rate and direction as the gas stream

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being sampled.

## J

## K

**Kinematic Viscosity.** See Viscosity (Kinematic).

## L

**Lognormal Distribution.** A frequency distribution that is symmetric (i.e. bell shaped) when plotted on a logarithmic abscissa.

**Lower Explosive Limit.** The lowest concentration at which a gas or vapor is flammable or explosive at ambient conditions.

## M

**Major Source (in the context of the Clean Air Act, air toxics provisions).** Any stationary source or group of stationary sources located within a contiguous area and under common control that emits, or has the potential to emit considering controls in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants (Section 112(a)(1)).

**Manometer.** An instrument used for measuring the pressure of liquids and gases. An open-tube manometer consists of a U-shaped tube that usually contains a liquid such as mercury or water. One end of the tube is open to the atmosphere and the other end of the tube is connected to the container where the pressure is to be measured.

**Mass.** The measure of the magnitude of a physical object that is related directly to the atoms in the object.

**Mass Concentration.** Concentration expressed in terms of mass of substance per unit volume of gas or liquid.

**Mass Flowmeter.** Device that measures the mass flow rate of air passing a point, usually using the rate of cooling or heat transfer from a heated probe.

**Mass Flow Controller.** A device that works on the principle of heat loss. The mass flow meter within the MFC has a small thermister that is sensitive to heat loss. A potential voltage is applied to the thermister. As the air flow increases across the thermister, the resistance of the thermister changes. This change in resistance can be measured very accurately by electronic circuitry. The mass flow circuitry can then be integrated with a controlling loop circuit that can control/monitor

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the flow instantaneously. Usually, MFCs have two channels, gas and diluent or air flow. The gas portion of the unit allows for gases from compressed cylinders to be allowed in and metered. The air flow side of the unit blends down the high concentration from the compressed cylinders to the desired working concentration. The flow rate of both portions of the unit must be measured accurately. It is important when purchasing a MFC calibrator that it meet the 40 CFR 50 requirements of having an accuracy within +/- 2%.

**Mass Median Particle Diameter.** The particle diameter at which half the particulate mass is composed of particles larger than this diameter and half the mass is composed of particles smaller than this diameter.

**Mass Transfer.** A natural phenomenon in which a component travels from a region of high concentration to one of low concentration in order to minimize concentration differences in a mixture.

**Master Flow-Rate Standard.** A flow-rate measuring device, such as a standard orifice meter, that has been calibrated against a primary standard.

**Matter.** The substance of which a physical object is composed.

**Maximum Achievable Control Technology (MACT).** EPA standards mandated by the 1990 CAAA for the control of toxic emissions from various industries.

**Mean.** The arithmetic average of distribution.

**Method Detection Limit (MDL).** The minimum concentration of an analyte that can be reported with 95% confidence that the value is above zero, based on a standard deviation of at least seven repetitive measurements of the analyte in the matrix of concern at a concentration near the low standard.

**Micrograms.** A unit of measurement for mass. One microgram equals  $10^{-6}$  grams.

**Milligrams.** A unit of measurement for mass. One milligram equals  $10^{-3}$  grams.

**Mist.** A loose term applied to dispersions of liquid particles, the dispersion being of low concentration and the particles of large size. In meteorology, a light dispersion of water droplets of sufficient size to be falling.

**Mode.** The value that occurs the most frequently in a distribution.

**Mole.** The mass of a material equal to the combined mass of  $6.023 \times 10^{23}$  atoms or molecules of the material.

**Mole Fraction.** An expression of the number of moles of a compound divided by the total number of moles of all compounds present.

**Momentum.** The product of the mass of an object times its velocity.

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## N

**Nanograms.** A unit of measurement for mass. One nanogram equals  $10^{-9}$  grams.

**National Ambient Air Quality Standards (NAAQS).** Enforced air quality standards established by EPA that apply to outdoor air throughout the country.

**Natural Logarithm (Napierian).** The exponent applied to the base number of 2.718 to equal a given value. For example, 2 is the natural logarithm that is equal to a value of 7.389.  $(2.718)^2=7.389$

**Negative Pressure.** A relative pressure that is below atmospheric pressure.

**Nucleate.** To form a central part around which other parts can attach.

**Non-Attainment Areas.** A geographic area that does not meet one or more of the federal air quality standards (NAAQS) for the criteria pollutants.

## O

**Odor.** That property of a substance affecting the sense of smell; any smell; scent; perfume.

**Odor Concentration.** The number of unit volumes that a unit volume of sample will occupy when diluted to the odor threshold.

**Odor Unit.** Unit volume of air at the odor threshold.

**Odorant.** Odorous substance.

**Operating Permit (Permit).** Document required by EPA under Title V for any major stationary source. Potential-to-emit limits defining a major source are determined by the air quality of the geographical region where the facility is located. A permit contains the specific information about how the facility will comply with established emission standards and guidelines set forth by EPA.

**Ordinate.** The Y-axis on a graph.

**Organic.** A term that applies to compounds that contain carbon-hydrogen bonds.

**Orifice Meter.** A flowmeter, employing as the measure of flow rate the difference between the pressures measured on the upstream and downstream sides of the orifice (that is, the pressure differential across the orifice) in the conveying pipe or duct.

**Ozone Season.** The ozone season from May 1 to September 30 (Northern Hemisphere) when ground-level ozone formation concentrations tend to be highest.

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## P

**Partial Pressure.** The fraction of the total static pressure in a gas stream caused by one of the constituents of the mixture.

**Particle.** A small discrete mass of solid or liquid matter.

**Particle Concentration.** Concentration expressed in terms of number of particles per unit volume of air or other gas. (Note: On expressing particle concentration, the method of determining the concentration should be stated.)

**Particle Fall.** A measurement of air contamination consisting of the mass rate at which solid particles deposit from the atmosphere. A term used in the same sense as the older terms Dust Fall and Soot Fall, but without any implication as to nature and source of the particles.

**Particle Size.** An expression for the size of liquid or solid particles expressed as the average or equivalent diameter.

**Particle Size Distribution.** The relative percentage by weight or number of each of the different size fractions of particulate matter.

**Particulate.** Solids or liquids existing in the form of separate particles.

**Particulate Matter.** Solid or liquid matter that is dispersed in a gas, or insoluble solid matter dispersed in a liquid, that gives a heterogeneous mixture.

**Penetration.** The ratio of the amount of pollutants leaving an air pollution control device versus the amount of pollutants entering the device.

**Penetration Efficiency.** The ratio of the amount of pollutants leaving an air pollution control device versus the amount of pollutants entering the device, expressed as a percent.

**Permeation Devices.** Calibration units that pass a known volume of air over a permeation tube. The permeation tube is a small cylinder (usually steel) that has a permeable membrane at one end. Usually the tube is filled with a liquid that permeates out through the membrane at a given rate at a very narrow temperature range. By knowing the permeation rate and the air flow rate, a NIST-traceable concentration in parts per million can be calculated.

**Photochemical Reaction.** Any chemical reaction that is initiated as a result of absorption of light.

**Photochemical Smog.** Air pollution resulting from photochemical reactions.

**Physical Attrition.** The act of wearing or grinding down by friction.

**PM<sub>2.5</sub>.** EPA defines PM<sub>2.5</sub> as particulate matter with a diameter of 2.5 micrometers collected with 50% efficiency by a PM<sub>2.5</sub> sampling collection device. However, for convenience in this reference

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material, the term  $PM_{2.5}$  includes all particles having an aerodynamic diameter of less than or equal to 2.5 micrometers.

**PM<sub>10</sub>.** EPA defines  $PM_{10}$  as particulate matter with a diameter of 10 micrometers collected with 50% efficiency by a  $PM_{10}$  sampling collection device. However, for convenience in this reference material, the term  $PM_{10}$  includes all particles having an aerodynamic diameter of less than or equal to 10 micrometers.

**Pollutant Ranking Assessment.** An assessment used to rank chemicals with respect to their impact on human health and the environment. Often used to select a subset of the most important chemicals on which to focus further risk assessments. For example, the 33 air toxics highlighted as priority pollutants in EPA's Urban Strategy were selected based on a number of factors, including toxicity-weighted emissions, monitoring data, past air quality modeling analysis, and a review of existing risk assessment literature.

**Population Exposure or Risk Assessment.** A process that evaluates the likelihood of an adverse impact on human health (risk), or amount of exposure, of a chemical or group of chemicals, for groups of actual or hypothetical people. For cancer-causing chemicals, population risk can be expressed as the number of people estimated to be exposed to specific risk levels or as the number of excess cancer cases expected to occur.

**Potential-to-Emit.** The total emissions that a facility would release by operating at maximum load for 24 hours per day and 365 days per year.

**PPBV [or PPB(V/V)].** A unit of measure of the concentration of gases in air expressed as parts of the gas per billion (10<sup>9</sup>) parts of the air-gas mixture, normally both by volume.

**PPMV [or PPM(V/V)].** The part per million concentration that is determined by comparing the volume of one constituent with the total volume of the substance. Gas concentrations are always expressed in a ppm(v/v) format as opposed to the ppm(w/w) format often used for liquids. Throughout APTI courses, the term ppm when applied to gases means ppm(v/v).

**PPMVD.** The part per million concentration that is determined by comparing the volume of one constituent with the volume of the other constituents with the exception of moisture.

**PPM(W/W).** The part per million concentration that is determined by comparing the mass of one constituent with the total mass of the sample. Liquid concentrations are often expressed in a ppm(w/w) format as opposed to the ppm(v/v) format used for gases. Throughout APTI courses, the term ppm when applied to liquids means ppm(w/w). Note that the abbreviation "w/w" is used despite the fact that the ppm concentration is based on a ratio of masses.

**Precipitation, Electrostatic.** A process consisting of the separation of particulate matter from air or other gases under the influence of an electrostatic field.

**Precipitation, Meteorological.** The precipitation of water from the atmosphere in the form of hail, mist, rain, sleet, and snow. Deposits of dew, fog, and frost are excluded.

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**Precipitation, Thermal.** A process consisting of the separation of particulate matter from air and other gases under the influence of a relatively large temperature gradient extending over a short distance. In the “Thermal Precipitator” (a sampling instrument), the air or gas is drawn through a narrow chamber across which extends a heated wire, particulate matter being deposited upon the adjacent collecting surface.

**Precipitation, Ultrasonic.** A process consisting of the separation of particulate matter from air and other gases following agglomeration induced by an ultrasonic field.

**Precipitator, Electrostatic.** Apparatus employing electrostatic precipitation for the separation of particles from a gas stream. The apparatus may be designed either for sampling or for cleaning large volumes of gas.

**Precision.** The degree of mutual agreement between individual measurements, namely repeatability and reproducibility.

**Preconcentration.** The process of removing organic vapors from a gas stream and transferring them to a smaller, more concentrated gas stream.

**Pressure Drop.** A measure of the resistance the gas stream encounters as it flows through an air control device or other piece of equipment.

**Pressure Static.** The pressure of a fluid at rest, or in motion, exerted perpendicularly to the direction of flow.

**Pressure, Velocity.** That pressure caused by and related to the velocity of the flow of fluid; a measure of the kinetic energy of the fluid.

**Pressure, Total.** The pressure representing the sum of static pressure and velocity pressure at the point of measurement.

**Pressure Gauge.** The difference in pressure existing within a system and that of the atmosphere. Zero gauge pressure is equal to atmospheric pressure.

**Primary Flow-Rate Standard.** A device or means of measuring flow rate based on direct primary observations such as time and physical dimensions.

**Primary Standard.** This is a flow device that is certified to be directly traceable to the NIST-SRM. These devices usually provide paperwork that proves that the device is traceable. Bubble meters, volumetric burettes, and some piston devices can be considered to be primary standards. Check with the vendor for certification of a primary standard. The primary standard should remain in the central laboratory and not be moved.

**Probe.** A tube used for sampling or for measuring pressures at a distance from the actual collection or measuring apparatus. It is commonly used for reaching inside stacks and ducts.

**Promulgate.** To put a law into effect by formal public announcement.

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## Q

**Quality.** The totality of features and characteristics of a product or service that bears on its ability to meet the stated or implied needs and expectations of the user.

**Quality Assurance (QA).** An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client.

**Quality Assurance Project Plan (QAPP).** A formal document describing in comprehensive detail the necessary quality assurance (QA), quality control (QC), and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. The QAPP components are divided into four classes: 1) Project Management, 2) Measurement/Data Acquisition, 3) Assessment/Oversight, and 4) Data Validation and Usability. Guidance and requirements on preparation of QAPPs can be found in EPA QA/R-5 and QA/G-5.

**Quality Control (QC).** The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated Operational techniques and activities that are used to fulfill requirements for quality. The system of activities and checks used to ensure that measurement systems are maintained within prescribed limits, providing protection against “out of control” conditions and ensuring the results are of acceptable quality.

## R

**°R.** Rankine is an absolute temperature scale often used in engineering. Using this scale, the freezing point of water is 492°R and the boiling point of water is 672°R.

**Receptor.** The entity which is exposed to the stressor (USEPA, 1997: Guidance on Cumulative Risk Assessment, Planning and Scoping).

**Reference Concentration (RfC).** An estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a no-observed-adverse-effect level (NOAEL), lowest-observed-adverse-effect level (LOAEL), or benchmark concentration, with uncertainty factors generally applied to reflect limitations of the data used. Generally used in EPA’s noncancer human health risk assessments.

**Reference Dose (RfD).** An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral dose exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used. Generally used in EPA’s noncancer human health risk assessments.

**Relative Pressure.** The difference in pressure between a point in a ventilation system or air pollution control system and the atmospheric pressure.

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**Relative Temperature.** The difference between the measured temperature value and an arbitrarily selected value, such as the freezing point of water.

**Resistivity.** A measure of a particle's ability to conduct electricity (expressed in units of ohm-cm). Resistivity is very important in the efficient operation of electrostatic precipitators.

**Reynolds' Number, Gas or Flow.** A dimensionless number corresponding to the ratio of the fluid inertial force to the fluid viscous force in a flow system. It is used as an index for turbulence.

**Reynolds' Number, Particle.** A dimensionless number corresponding to the ratio of the inertial force of a particle to the viscous force of the surrounding fluid in a flow system. It is used as an index for turbulence.

**Risk (in the context of human health).** The probability of injury, disease, or death from exposure to a chemical agent or a mixture of chemicals. In quantitative terms, risk is expressed as values ranging from zero (representing the certainty that harm will not occur) to one (representing the certainty that harm will occur).

**Risk Assessment (in the context of human health).** The determination of potential adverse health effects from exposure to chemicals, including both quantitative and qualitative expressions of risk. The process of risk assessment involves four major steps: hazard identification, dose-response assessment, exposure assessment, and risk characterization.

**Risk-Based Concentrations (RBCs).** An estimate of a health-based air concentration of a chemical that a person or ecosystem could be exposed to that would not result in a risk of cancer or other adverse health effects above a specified level of concern. The risk-based concentration is developed from toxicological dose response values (for human health, usually selecting the most protective of both cancer toxicological dose response values and noncancer toxicological dose response values) and assumptions about exposure rates. It is a tool used to identify which chemicals may pose a threat to human or ecological receptors without conducting an exposure or risk assessment.

**Risk-Based Doses (RBDs).** An estimate of a health-based, media-specific concentration (e.g., soil or water) of a chemical that a person or ecosystem could be exposed to that would not result in a risk of cancer or other adverse health effects above a specified level of concern. The risk-based dose is developed from toxicological dose response values (for human health, usually selecting the most protective of both cancer toxicological dose response values and noncancer toxicological dose response values) and assumptions about exposure rates. It is a tool used to identify which chemicals may pose a threat to human or ecological receptors without conducting an exposure or risk assessment.

**Risk Characterization.** The final, summarizing step of a risk assessment. The risk characterization integrates information from the preceding components of the risk assessment and synthesizes an overall conclusion about risk that is complete, informative, and useful for decision makers. It conveys the risk assessor's judgment as to the nature and existence of (or lack of) human health or ecological risks.

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**Risk Management (in the context of human health).** A decision making process that accounts for political, social, economic, and engineering implications together with risk-related information in order to develop, analyze, and compare management options and select the appropriate managerial response to a potential chronic health hazard.

**Rotameter.** A device, based on the principle of Stoke's law, for measuring rate of fluid flow. It consists of a tapered vertical tube having a circular cross section, and containing a flow that is free to move in a vertical path to a height dependent upon the rate of fluid flow upward through the tube.

## S

**Sample, Integrated.** A sample obtained over a period of time with (1) the collected atmosphere being retained in a single vessel, or (2) with a separated component accumulating into a single whole. Examples are particle sampling, in which all the particles separated from the air are accumulated in one mass of fluid; the absorption of acid gas in an alkaline solution; and collection of air in a plastic bag. Such a sample does not reflect variations in concentration during the period of sampling.

**Sample, Continuous.** Withdrawal of a portion of the atmosphere over a period of time with continuous analysis or with separation of the desired material continuously and in a "linear" form. Examples are continuous withdrawal of the atmosphere accompanied by absorption of a component in a flowing stream of absorbent or by filtration on a moving strip or paper. Such a sample may be obtained with a considerable concentration of the contaminant, but it still indicates fluctuations in concentration that occur during the period of sampling.

**Sampling.** A process consisting of the withdrawal or isolation of a fractional part of a whole. In air or gas analysis, the separation of a portion of an ambient atmosphere with or without the simultaneous isolation of selected components.

**Sampling, Condensation.** A process consisting of the collection of one or several components of a gaseous mixture by the simple cooling of the gas stream in a device that retains the condensate.

**Sampling, Continuous.** Sampling without interruptions throughout an operation or for a predetermined time.

**Sampling, Instantaneous.** Obtaining a sample of an atmosphere in a very short period of time such that this sampling time is insignificant in comparison with the duration of the operation or the period being studied.

**Sampling, Intermittent.** Sampling successively for limited periods of time throughout an operation or for a predetermined period of time. The duration of sampling periods and of the intervals between are not necessarily regular and are not specified.

**SCFM.** The acronym for standard cubic feet per minute, which is the gas flow rate at standard conditions expressed in the American Engineering system of units.

**Scrubbing Liquid.** A liquid used to remove particulate or gaseous pollutants by absorption or chemical reaction through contact with the gas stream.

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**Series Collection.** An operation involving the use of two or more collectors joined in a series.

**Settling Velocity.** The terminal rate of fall of a particle through a fluid as induced by gravity or other external force; the rate at which frictional drag balances the accelerating force (or the external force).

**Sheave(s).** Part of the drive system that supports the belt that extends from the drive shaft to the fan shaft.

**Sieving.** A process that occurs in fabric filters whereby the dust cake, which has accumulated on the fabric surface, acts as a filter for collecting particles.

**Silica Gel.** A regenerative adsorbent consisting of amorphous silica ( $\text{SiO}_2$ ) with OH surface groups, making it a polar material and enhancing surface reactions.

**Smog.** A term derived from smoke and fog, applied to extensive atmospheric contamination by aerosols which arise partly through natural processes and partly from the activities of human subjects. Now sometimes used loosely for any contamination of air. (See also Smog, Photochemical.)

**Smog, Photochemical.** Air contamination caused by chemical reactions of pollutants formed primarily by the action of sunlight on oxides of nitrogen and hydrocarbons.

**Smoke.** Small gas-borne particles resulting from incomplete combustion, consisting predominantly of carbon and other combustible material, and present in sufficient quantity to be observable independently of the presence of other solids.

**Solute.** The substance distributed (i.e. dissolved or suspended) in a solvent.

**Solution.** A substance (usually a liquid) that dissolves a solute to form a solution.

**Sorbent.** A liquid or solid medium in or upon which materials are retained by absorption or adsorption.

**Sorption.** A process consisting of either absorption or adsorption or both.

**Specific Gravity.** A ratio of the density of a liquid and the density of pure water at a specific temperature.

**Spirometer.** A displacement gasometer consisting of an inverted bell resting upon or sealed by liquid (or other means) and capable of showing the amount of gas added to or withdrawn from the bell by the displacement (rise or fall) of the bell.

**Standard.** A concept that has been established by authority, custom, or agreement to serve as a model or rule in the measurement of quantity of the establishment of a practice or procedure.

**Standard Conditions (EPA-defined).** EPA-defined standard conditions of temperature and

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pressure are 68°F (20°C) and 14.7 psia (760 mm Hg).

**Standard Deviation.** A measure of the dispersion of a set of numbers.

**Standard Operating Procedure (SOP).** A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps and that is officially approved as the method for performing certain routine or repetitive tasks.

**State Implementation Plan (SIP).** A complex and voluminous document that contains comprehensive emission inventories, proposed control strategies, demonstration of modeling/calculation results, summaries of regulatory authority, description of monitoring programs, and enforcement procedures.

**Static Pressure.** A measure of the resistance to airflow through a system.

**Stationary Source.** Any building, structure, facility, or installation which emits or may emit any air pollutant.

**Stratosphere.** The atmospheric layer just above the troposphere, which starts at approximately 7.5 miles (12 km) above the Earth and rises to approximately 31.1 miles (50 km). The beneficial ozone layer resides in the stratosphere.

**Stressors.** Physical, chemical, or biological entities that can induce adverse effects on ecosystems or human health [EPA/OA/Office of Communications, Education, and Media Relations: Terms of Environment: Glossary, Abbreviations, and Acronyms (Revised December 1997)].

**Sulfates.** Inorganic salts of sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) containing the divalent, negative ion.

**Sulfites.** Inorganic salts of sulfurous acid (H<sub>2</sub>SO<sub>3</sub>) containing the divalent, negative ion.

## T

**Terminal Settling Velocity.** The velocity of a falling particle when the gravitational force downward is balanced by the air resistance (or drag) force upward.

**Total Filterable Particulate Matter.** Particulate matter of all sizes is regulated as total filterable particulate matter. This category of air pollutants was the first one that was subject to air pollution control regulations.

**Total Suspended Particulates (TSP).** Particulate matter collected by the high-volume sampler, usually particles of up to 100 micrometers in aerodynamic diameter

**Traceability.** This term is defined in 40 CFR Parts 50 and 58 as meaning, “that a local standard has been compared and certified, either directly or via not more than one intermediate standard, to a primary standard such as a National Institute of Standards and Technology Standard Reference material (NIST-SRM).”

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**Transfer Standard.** A transfer standard is a device that is certified against a primary standard. These standards usually travel to monitoring stations. Transfer standards can be volumetric, electronic flow meters, wet test meters, pressure gauges, or pressure/flow transducers. These devices usually have a certain amount of error involved in their operation and can drift with time. Therefore they must be verified against a primary standard on a known set schedule.

**Traceability to NIST.** Documented procedure by which a standard is related to a more reliable standard verified by the National Institute of Standards Technology (NIST).

**Troposphere.** The lowest layer of the Earth's atmosphere, which rises to a height of approximately 7.5 miles (12 km). Air masses, fronts, and storms reside in this layer.

## U

**Ultrafine Particles.** EPA classification of particles having aerodynamic diameters less than or equal to 0.1 micrometer.

**Uncertainty.** An allowance assigned to a measured value to take into account two major components of error: The systematic error and the random error attributed to the imprecision of the measurement process.

**Unit Risk Estimate or Factor (URE or URF).** The upper-bound excess lifetime cancer risk estimated to result for continuous exposure to an agent at a concentration of 1 Fg/L in water, or 1 Fg/m<sup>3</sup> in air. The interpretation of unit risk would be as follows: if unit risk =  $1.5 \times 10^{-6}$  Fg/L, 1.5 excess tumors are expected to develop per 1,000,000 people if exposed daily for a lifetime to 1 Fg of the chemical in 1 liter of drinking water.

## V

**Van der Waal Forces.** Weak attraction forces (1 to 10 Kcal/gm-mole) between molecules such as in gases and liquids.

**Vapor.** The gaseous phase of matter which normally exists in a liquid or solid state.

**Vapor Pressure.** In a closed system at a constant temperature, the pressure exerted by gaseous molecules that are in equilibrium with molecules of the same kind in the liquid or solid state.

**Velocity Pressure.** The pressure required to accelerate air from zero velocity to a greater velocity. It is proportional to the kinetic energy of the air stream.

**Venturi Scrubber.** A type of wet scrubber that is usually highly efficient but requires a large amount of energy to operate. (Wet scrubbers are air pollution control devices.) In venturi scrubbers, a scrubbing liquid is introduced into the gas stream, which then passes through a contracted area of the scrubber at a high velocity creating a high dispersion of fine droplets. These fine droplets capture the gaseous and particulate pollutants.

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**Verification.** A verification is the process of checking one primary authority against another primary authority. This can be done by inter-comparing two primary standards against each other or an agency primary standard against another agency's primary standard or NIST standard.

**Verification.** Confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. In design and development, verification concerns the process of examining a result of a given activity to determine conformance to the stated requirements for that activity.

**Viscosity (Absolute).** The resistance of a fluid to shear stress.

**Viscosity (Kinematic).** The value obtained when the absolute viscosity is divided by the density of the fluid.

**Volume Concentration.** Concentration expressed in terms of gaseous volume of substance per unit volume of air or other gas, usually expressed in percent or parts per million.

**Volume Percent.** Percentage of the total volume of a gas sample that is comprised of the volume of a single gaseous constituent.

## W

**Working Flow-Rate Standard.** A flow-rate measuring device, such as a standard orifice meter, that has been calibrated against a master flow-rate standard. The working flow-rate standard is used to calibrate a flow measuring or flow rate indicating instrument.

## X

## Y

## Z

## Acronyms

<b>ACFM</b>	Actual Cubic Feet per Minute
<b>AIRS</b>	Aerometric Information Retrieval System
<b>ADBA</b>	AIRS Data Base Administrator
<b>AIRMoN</b>	Atmospheric Integrated Research Monitoring Network
<b>ALAPCO</b>	Association of Local Air Pollution Control Officials
<b>AMTIC</b>	Ambient Monitoring Technical Information Center
<b>APTI</b>	Air Pollution Training Institute
<b>AQI</b>	Air Quality Index

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<b>AQS</b>	Air Quality (data) System
<b>AQSSD</b>	Air Quality Strategies and Standards Division
<b>ARM</b>	Approved Regional Method
<b>AWMA</b>	Air and Waste Management Association
<b>BAM</b>	Beta Attenuation Monitor
<b>BTU</b>	British Thermal Unit
<b>CAA</b>	Clean Air Act
<b>CAC</b>	Correlating Acceptable Continuous (monitor)
<b>CAIR</b>	Clean Air Interstate Rule
<b>CASAC</b>	Clean Air Science Advisory Committee
<b>CBI</b>	Confidential Business Information
<b>CBSA</b>	Core Based Statistical Area
<b>CENR</b>	Committee for Environment and Natural Resources
<b>CEU</b>	Continuing Education Unit
<b>CFR</b>	Code of Federal Regulations
<b>CMAQ</b>	Community Model Air Quality (system)
<b>CO</b>	Carbon Monoxide
<b>CO</b>	Contracting Officer
<b>CRPAQS</b>	Central Valley (California) Regional Particulate Air Quality Study
<b>CSA</b>	Consolidated Statistical Area
<b>CV</b>	Coefficient of Variance
<b>CY</b>	Calendar year
<b>DC</b>	Direct Current
<b>DCO</b>	Document Control Officer
<b>DD</b>	Division Director
<b>DHS</b>	Department of Homeland Security
<b>DMC</b>	Data Management Center
<b>DOE</b>	Department of Energy
<b>DOI</b>	Department of Interior
<b>DQA</b>	Data Quality Assessment
<b>DQAO</b>	Deputy QA Officers
<b>DQI</b>	Data Quality Indicator
<b>DQOs</b>	Data Quality Objectives
<b>EC</b>	Elemental Carbon
<b>EDO</b>	Environmental Data Operation
<b>EMAD</b>	Emissions, Monitoring, and Analysis Division
<b>EPA</b>	U.S. Environmental Protection Agency
<b>EPAAR</b>	EPA Acquisition Regulations
<b>ESAT</b>	Environmental Services Assistance Team
<b>ESD</b>	Emission Standards Division
<b>ETSD</b>	Enterprise Technology Services Division
<b>FAR</b>	Federal Acquisition Regulations
<b>FEM</b>	Federal Equivalent Method
<b>FIPS</b>	Federal Information Processing Standards
<b>FLM</b>	Federal Land Manager
<b>FPD</b>	Flame Photometric Detection
<b>FRM</b>	Federal Reference Method
<b>FY</b>	Fiscal Year

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<b>GAO</b>	General Accounting Office
<b>GC</b>	Gas Chromatograph
<b>GFC</b>	Gas Filter Correlation
<b>GIS</b>	Geographical Information Systems
<b>GLP</b>	Good Laboratory Practice
<b>HAP</b>	Hazardous Air Pollutants
<b>HCN</b>	Hydrogen Cyanide
<b>HEI</b>	Health Effects Institute
<b>IACET</b>	International Association for Continuing Education and Training
<b>IADN</b>	Interagency Deposition Network
<b>IAG</b>	Interagency Agreement
<b>IC</b>	Ion Chromatography
<b>IDP</b>	Individual Development Plans
<b>IMPROVE</b>	Interagency Monitoring of Protected Visual Environments
<b>IR</b>	Infrared
<b>IT</b>	Information Technology
<b>ITEP</b>	Institute of Tribal Environmental Professionals
<b>ITPID</b>	Information Transfer and Program Integration Division
<b>ITT</b>	Information Transfer Technology
<b>K</b>	Thousand
<b>LAN</b>	Local Area Network
<b>LDL</b>	Lower Detectable Limit
<b>M</b>	Million
<b>MACT</b>	Maximum Achievable Control Technology
<b>MANE-VU</b>	Mid-Atlantic/Northeast Visibility Union
<b>MDL</b>	Method Detection Limit
<b>MDN</b>	Mercury Disposition Network
<b>MQAG</b>	Monitoring and Quality Assurance Group
<b>MQOs</b>	Measurement Quality Objectives
<b>MPA</b>	Monitoring Planning Area
<b>Mo</b>	Molybdenum
<b>MSA</b>	Metropolitan Statistical Area
<b>MSR</b>	Management System Review
<b>N<sub>2</sub></b>	Nitrogen
<b>NAAMS</b>	National Ambient Air Monitoring Strategy
<b>NADP</b>	National Atmospheric Deposition Program
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NAMS</b>	National Air Monitoring Station
<b>NAPAP</b>	National Acid Precipitation Assessment Program
<b>NARSTO</b>	North American Research Strategy for Tropospheric Ozone
<b>NAS</b>	National Academy of Science
<b>NASA</b>	National Aeronautics and Space Administration
<b>NAU</b>	Northern Arizona University
<b>NCORE</b>	National Core Monitoring Network
<b>NDIR</b>	Non-Dispersive Infrared
<b>NECMSA</b>	New England County Metropolitan Statistical Area
<b>NESHAP</b>	National Emission Standards for Hazardous Air Pollutants
<b>NH<sub>3</sub></b>	Ammonia

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<b>NH<sub>4</sub><sup>+</sup></b>	Ammonium	
<b>NIST</b>	National Institute of Standards and Technology	
<b>NMHC</b>	Non-Methane Hydrocarbons	
<b>NMSC</b>	National Monitoring Strategy (or Steering) Committee	
<b>NO</b>	Nitrogen Oxide	
<b>NO<sub>2</sub></b>	Nitrogen Dioxide	
<b>NO<sub>x</sub></b>	Nitrogen Oxides	
<b>NO<sub>y</sub></b>	Reactive Nitrogen Oxides	
<b>NOAA</b>	National Oceanic and Atmospheric Administration	
<b>NPAP</b>	National Performance Audit Program	
<b>NPEP</b>	National Performance Evaluation Program	
<b>NPN</b>	Non-Propyl Nitrate	
<b>NPS</b>	National Parks Service	
<b>NSPS</b>	New Source Performance Standard	
<b>NTN</b>	National Trends Network	
<b>O<sub>3</sub></b>	Ozone	
<b>OAP</b>	Office of Atmospheric Programs	
<b>OAQPS</b>	Office of Air Quality Planning and Standards	
<b>OARM</b>	Office of Administration and Resources Management	
<b>OC</b>	Organic Carbon	
<b>OEI</b>	Office of Environmental Information	
<b>OIRM</b>	Office of Information Resources Management	
<b>OMB</b>	Office of Management and Budget	
<b>ORD</b>	Office of Research and Development	
<b>ORIA</b>	Office of Radiation and Indoor Air	
<b>PAMS</b>	Photochemical Assessment Monitoring Stations	
<b>P&amp;A</b>	Precision and Accuracy	
<b>Pb</b>	Lead	
<b>PBT</b>	Persistent Bioaccumulative Toxics	
<b>PBMS</b>	Performance Based Measurement System	
<b>PC</b>	Personal Computer	
<b>PE</b>	Performance Evaluation	
<b>PEP</b>	Performance Evaluation Program	
<b>Pt</b>	Platinum	
<b>PM</b>	Particulate Matter	
<b>PM<sub>10</sub></b>	Particulate Matter with aerodynamic diameter less than micrometers	10
<b>PM<sub>2.5</sub></b>	Particulate Matter with aerodynamic diameter less than micrometers	2.5
<b>PMT</b>	Photomultiplier Tube	
<b>POP</b>	Persistent Organic Pollutants	
<b>ppb</b>	part per billion	
<b>ppm</b>	part per million	
<b>PR</b>	Procurement Request	
<b>PMSA</b>	Primary Metropolitan Statistical Area	
<b>PSD</b>	Prevention of Signification Deterioration	
<b>PDW</b>	Primary Wind Direction	
<b>QA</b>	Quality Assurance	

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<b>QC</b>	Quality Control
<b>QA/QC</b>	Quality Assurance/Quality Control
<b>QAPP</b>	Quality Assurance Project Plan
<b>QMP</b>	Quality Management Plan
<b>RADM</b>	Regional Acid Deposition Model
<b>REM</b>	Regional Equivalent Monitor
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>RO</b>	EPA Regional Office
<b>ROM</b>	Regional Oxidant Model
<b>RPO</b>	Regional Planning Organization
<b>RTP</b>	Research Triangle Park (North Carolina)
<b>S &amp; T</b>	Science and Technology
<b>SAMWG</b>	Standing Air Monitoring Workgroup
<b>SCFM</b>	Standard Cubic Feet per Minute
<b>SCG</b>	Source Characterization Group
<b>SIPS</b>	State Implementation Plans
<b>SIRMO</b>	Servicing Information Resources Management Officer
<b>SLAMS</b>	State and Local Air Monitoring Station
<b>SLTs</b>	State and Local Agencies and Tribes
<b>SO<sub>2</sub></b>	Sulfur Dioxide
<b>SOP</b>	Standard Operating Procedure
<b>SOW</b>	Statement or Scope Of Work
<b>SPM</b>	Special Purpose Monitor
<b>SPMS</b>	Special Purpose Monitoring Stations
<b>SRP</b>	Standard Reference Photometer
<b>SS</b>	Supersite
<b>STAG</b>	State and Tribal Air Grant
<b>STAPPA</b>	State and Territorial Air Pollution Program Administrators
<b>STN</b>	Speciation Trend Network
<b>Strategy</b>	The National Air Monitoring Strategy
<b>SVOC</b>	Semi-Volatile Organic Compound
<b>SYSOP</b>	System Operator
<b>TAD</b>	Technical Assistance Document
<b>TAMS</b>	Tribal Air Monitoring Support (Center)
<b>TAR</b>	Tribal Authority Rule
<b>TBD</b>	To Be Determined
<b>TEOM</b>	Tapered Element Oscillation Monitor
<b>TIP</b>	Tribal Implementation Plan
<b>TNMOC</b>	Total Non-Methane Organic Compound
<b>TSA</b>	Technical System Audit
<b>TSP</b>	Total Suspended Solids
<b>TSP</b>	Total Suspended Particulates
<b>USB</b>	Universal Serial Bus
<b>VOC</b>	Volatile Organic Compound
<b>UV</b>	Ultraviolet
<b>WAM</b>	Work Assignment Manager
<b>XML</b>	Extensible Markup Language

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