

Glossary of Key Regulatory Terms for the Solvents Industry

The Solvents Council of the American Chemistry Council has compiled this glossary to provide brief definitions of many of the most important terms used in regulatory programs that affect the solvents industry. Although the glossary does not attempt to cover all the regulatory terms that may be relevant for users and distributors of solvents, the Council believes it will serve as a useful starting point for most solvent users. Readers should keep in mind, however, that this glossary is only meant to serve as a starting point. In many situations – especially where legal obligations may flow from a regulatory term – solvent users will need to consult the relevant regulatory documents to understand the precise definition of the terms set forth below.

Action Level. The exposure level (expressed as a concentration in air) at which Occupational Safety and Health Administration (OSHA) regulations to protect employees take effect. Such regulations may require such things as workplace air analysis, employee training, medical monitoring, and record keeping. Exposure at or above the action level is termed occupational exposure. The action level is generally half the Threshold Limit Value (TLV).

AIM Coatings. Shorthand for “architectural and industrial maintenance” coatings. Such coatings are not applied on a production line, but are designed for field application on stationary structures, portable buildings, pavement, or curbs. AIM coatings include interior and exterior paints

and primers, bridge coatings, and traffic marking and sign paints.

Alternative Control Techniques (ACTs). Guidance documents developed by US Environmental Protection Agency that recommend strategies and options for controlling Volatile Organic Compounds (VOCs) and Nitrous Oxides (NO_x) emissions from different types of emissions sources. ACTs are less formal than Control Technology Guidelines (CTGs) and do not impose binding legal requirements. However, state and local agencies often develop their own regulatory requirements based on recommendations contained in ACTs.

American Conference of Governmental and Industrial Hygienists (ACGIH). A non-governmental body empowered to develop the Threshold Limit Values (TLVs) that represent permissible workplace exposure levels for many chemicals. Located in Cincinnati, Ohio, ACGIH periodically publishes a summary booklet that, for each covered compound, lists the applicable TLV along with a summary of the information upon which the TLV is based.

American Society for Testing and Materials (ASTM). ASTM establishes standards, practices, and guides for materials, products, systems, and services. It operates through 170 technical committees. ASTM has developed more than 9000 standard test methods, specifications, classifications, definitions, recommended practices, and guides now used in many industries. Most test methods

for solvents were developed by ASTM through “round robin” cooperative activities involving industry and academic experts.

Area Source. Under the Clean Air Act, any stationary source of hazardous air pollutants (HAPs) that is not a major source is considered to be an area source. Area sources of hazardous air pollutants (HAPs) are not generally subject to MACT standards (maximum achievable control technology) developed by US Environmental Protection Agency, although they may be subject to other requirements.

Attainment Area. An area whose boundaries are determined jointly by a state and US Environmental Protection Agency that meets the national ambient air quality standards (NAAQS) established by EPA under the Clean Air Act. An area may be an attainment area for certain pollutants and a nonattainment area for others. Attainment areas generally have less stringent regulatory standards than nonattainment areas.

Best Available Control Technology (BACT). Technology required on new major sources that are built in attainment areas and on major modifications to existing facilities in such areas. BACT is established on a case-by-case basis through a permitting process required under the Clean Air Act. Controls required as BACT can be, but are not necessarily, less stringent than Lowest Achievable Emission Rate (LAER).

California Air Resources Board (CARB). CARB is the air pollution control agency for the State of California. CARB develops regulations for certain types of sources in the State, but individual air districts (such as the South Coast Air Quality Management District or

SCAQMD) have authority to set regulations for other types of sources within their boundaries.

Capture Device. A hood, enclosed room, floor sweep or other means of collecting solvent or pollutants into a duct. The pollutant is then directed to a pollution control device such as an incinerator or carbon absorber. The term is sometimes used loosely to include the control device.

Capture Efficiency. The fraction of all organic vapors generated by a process that are captured and directed to an abatement or recovery device.

Carbon Absorber. An air pollution control device that uses activated carbon to absorb volatile organic compounds (VOCs) from a gas stream. The VOCs are later recovered from the carbon, usually by steam stripping.

CAS Number. A Chemical Abstracts Service identification number assigned to a chemical or mixture by the American Chemical Society. The CAS number is recognized and used throughout the world by scientific and regulatory organizations. Oxygenated solvents have an unequivocal CAS number, while the CAS number assigned to a hydrocarbon solvent depends to a great extent on the method of manufacture and the boiling range. Since there is some latitude in assigning CAS numbers to hydrocarbon solvents, marketers may assign different numbers. The CAS number for a product will be listed on its Material Safety Data Sheet (MSDS).

Catalytic Incinerator. A control device that oxidizes volatile organic compounds (VOCs) by using a catalyst

to promote the combustion process. The catalyst allows the combustion process to proceed at a lower temperature (usually 600° to 800° F) than a conventional thermal incinerator would require (1100° to 1400° F), resulting in fuel savings and lower cost incineration.

CFR (Code of Federal Regulations). A multi-volume compilation of federal regulations published by the federal Government Printing Office. Changes and additions to the CFR are made through notices published in the *Federal Register*, which is published daily. The CFR volumes that contain regulations established by EPA and Occupational Safety and Health Administration (OSHA) are normally updated annually.

Clean Air Act. Enacted in 1970 and substantially amended in 1977 and 1990, the Clean Air Act is the longest and most complex of all US environmental statutes. It regulates everything from industrial plants and refineries (so-called “stationary sources”) to consumer products (ranging from paints to underarm deodorants) to engines and fuels. It also mandates programs designed to reduce acid rain, to protect the stratospheric ozone layer, and to control emissions of almost 200 compounds listed as hazardous air pollutants (HAPs).

Control Device. This is any type of equipment that reduces the concentration of a pollutant in an exhaust gas. The control device is referred to as “add-on” technology as opposed to “pollution prevention,” which is designed to control pollution by altering the underlying manufacturing process. A control device may destroy a pollutant or capture it for subsequent recovery. Examples are

incinerators, carbon absorbers, and condensers.

Control Device Efficiency. This is the ratio of the amount of pollutant introduced to the control device minus the pollutant released by the control device divided by the pollutant introduced to the control device, usually expressed as a percentage.

Control Technique Guidelines (CTGs). Guidance documents developed by US Environmental Protection Agency (EPA) that outline control strategies for reducing VOC emissions from certain types of sources. Although CTGs do not impose legally binding requirements, they identify a level of control that EPA views as “reasonably available control technology” (RACT). Under the Clean Air Act, an ozone nonattainment area must either adopt the CTG recommendations as RACT or justify a decision to impose some other standard as RACT.

Criteria Pollutant. The Clean Air Act requires US Environmental Protection Agency (EPA) to establish “national ambient air quality standards” or NAAQS (expressed as concentration in air) for all “criteria pollutants.” Criteria pollutants are those pollutants that US Environmental Protection Agency (EPA) has determined (1) “cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare,” and (2) exist in ambient air as a result of “numerous or diverse mobile or stationary sources.” EPA has identified the following as criteria pollutants: ozone, nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter (PM), fine particulate matter (PM_{2.5}), carbon monoxide (CO), and lead.

De Minimis. As used for solvents, the *de minimis* threshold is a level below which trace impurities or minor constituents in a product do not need to be reported. Under a number of

regulatory programs that require reporting of hazardous air pollutants (HAPs) or other regulated compounds that may be present in solvents and other products, the *de minimis* threshold is 0.1 percent (by weight) for defined carcinogens and 1.0 percent for other compounds.

Emergency Planning and Community Right-to-Know Act (EPCRA). Also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), EPCRA was enacted by Congress as the national legislation on community safety. Section 313 of EPCRA requires many types of facilities (including most coating operations) to report their “releases” of hundreds of listed compounds. These releases are compiled into the “toxics release inventory” (TRI), which is published annually.

(EPA) US Environmental Protection Agency. The federal agency that has been given primary responsibility for implementing and enforcing a broad range of pollution control laws enacted by Congress, including the Clean Air Act, the Clean Water Act, TSCA (Toxic Substances Control Act), FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act), and EPCRA (Emergency Planning and Community Right-to-know Act). The head of the Agency is the EPA Administrator.

Federal Implementation Plan (FIP). An air pollution plan that US Environmental Protection Agency must develop and enforce if a state fails to develop an acceptable SIP (State Implementation Plan).

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Congress enacted FIFRA to provide for federal control of pesticide distribution, sale, and use. Under

FIFRA, a pesticide may not be sold or used unless it is “registered” by US Environmental Protection Agency (EPA). A pesticide cannot be registered unless EPA determines that it will not cause unreasonable harm to the environment.

Flash Point. The temperature at which a liquid will give off enough flammable vapor to ignite when a “tease flame” is passed through the vapor space. Many safety regulations contain provisions based on the flash point temperature.

Hazardous Air Pollutants (HAPs). A list of 188 compounds and classes of compounds contained in Section 112 of the Clean Air Act. US Environmental Protection Agency (EPA) is required to develop MACT (maximum achievable control technology) standards for any facility that is classified as a “major source” of HAPs. EPA has authority to add or remove compounds from the HAP list.

IARC (International Agency for Research on Cancer). IARC is part of the World Health Organization (WHO). Its mission is to coordinate and conduct research on the causes of human cancer and the mechanisms of carcinogenesis. The IARC Monographs series publishes assessments of the carcinogenic risks posed to humans by a variety of agents and classifies compounds based on potential to cause cancer in humans.

Lowest Achievable Emission Rate (LAER). The degree of emissions control required on new major sources and major modifications in nonattainment areas. The technology must be the best in use or most stringent in any SIP (State Implementation Plan) and cost is not taken into account.

LVP (low vapor pressure). A vapor pressure cut-off of 0.1 mm Hg at 20° C applies to many types of consumer products. Any compound with a vapor pressure below the cut-off is not counted against the applicable volatile organic compound (VOC)-content limit. The LVP cut-off may be different for certain types of products. Formulators should consult the applicable regulations in order to determine the LVP cut-off that applies to their particular products.

Major Source. This is any stationary source that has emissions exceeding the threshold level for a particular pollutant. The specific emissions level that defines a major source depends upon the pollutant and the degree of pollution in the nonattainment area.

Material Safety Data Sheet (MSDS). Descriptive documentation which accompanies chemical shipments. The MSDS concisely provides data to serve as a basis for written hazard communication programs. The thrust of the MSDS program is to have those who make, distribute, and use hazardous materials responsible for effective communication.

Maximum Achievable Control Technology (MACT). Technology controls to be established for major sources of the 188 compounds listed as Hazardous Air Pollutants (HAPs). MACT must reflect the maximum degree of reduction available, taking into account costs and other factors.

Method 24. A US Environmental Protection Agency reference method to determine density, water content, and total volatile content (water and VOC) of coatings. It is based on a series of ASTM (American Society for Testing and Materials) standard methods. (40 CFR Part 60 Appendix A).

Method 311. A US Environmental Protection Agency reference method to determine the HAP

(hazardous air pollutant) content of coatings. (40 CFR Part 60 Appendix A).

National Ambient Air Quality Standards

(NAAQS). Standards for maximum allowable concentration of seven air pollutants in ambient air set by US Environmental Protection Agency to protect public health with an adequate margin of safety (primary standards) and to protect the environment (secondary standards). The seven pollutants are ozone, nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter (PM), fine particulate matter (PM_{2.5}), carbon monoxide (CO), and lead.

National Emission Standards for Hazardous Air Pollutants (NESHAPs). A program established to regulate hazardous air pollutants (HAPs).

New Source Performance Standards (NSPSs). Source specific emissions standards set for new and modified sources.

New Source Review (NSR). A federal program for preconstruction review of new major sources and major modifications under PSD (protection of significant deterioration) and nonattainment requirements.

Nonattainment Area. A geographic area in which one or more of the NAAQS (National Ambient Air Quality Standards) are violated. Nonattainment for ozone is the most common. A specific timetable has been set for nonattainment areas to achieve the standard.

NTP (National Toxicology Program). NTP was established in 1978 by the Secretary of Health and Human

Services to coordinate toxicology research and testing activities and to provide information about potentially toxic chemicals to regulatory and research agencies and the public. NTP periodically publishes a “list of carcinogens” that may trigger a number of regulatory requirements.

OSHA (Occupational Safety and Health Administration). Part of the US Department of Labor. OSHA is the regulatory and enforcement agency charged with assuring safety and health in the workplace.

Permissible Exposure Limit (PEL). PELs are established by the Department of Labor acting through OSHA (Occupational Safety and Health Administration). A PEL represents the maximum worker exposure allowed for a substance over an eight-hour day. While both threshold limit values (TLVs) and PEL values have been established for many substances, they are not necessarily the same. The TLVs are examined and modified more frequently than the PEL values. Consequently, in most cases, the TLV represents a more recent evaluation of the hazards associated with worker exposure to a substance.

Prevention of Significant Deterioration (PSD). Refers to regulations requiring preconstruction review of major new sources and major modifications of sources located in attainment or unclassified areas. The requirements are outlined in 40 CFR 52.21, 40 CFR 51.24 and part D of the Clean Air Act. The objective of the PSD program is to ensure that areas of the country that are relatively free from air pollution remain that way.

Proposition 65. Formally known as the California Safe

Drinking Water and Toxic Enforcement Act, the Act was voted in through the initiative process. The state establishes two lists, one of which contains compounds known to the state to cause cancer, while the other list contains compounds known to be fetotoxic. Labeling requirements were established to assure that anyone potentially exposed to compounds on the lists are notified. Since an advisory committee periodically reviews the lists and adds compounds, the lists are always changing.

Reactivity. Often used as a shorthand for “photochemical reactivity.” The “reactivity” of a compound is simply a measure of its potential to form ground-level ozone under certain defined conditions. A reactivity scale can be used to compare the ozone-forming potential of different compounds.

Reasonably Available Control Technology (RACT). The lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available, considering technological and economic feasibility. RACT is usually applied to existing sources in nonattainment areas and in most cases is less stringent than new source performance standards. RACT reflects controls US Environmental Protection Agency has identified in Control Technology Guidelines (CTGs) or other guidance.

South Coast Air Quality Management District (SCAQMD). The air pollution control body established in Southern California. SCAQMD governs air pollution control efforts in Los Angeles County, Orange County, Riverside County, and San Bernardino County.

State Implementation Plans (SIPs). Under Section 110 of the Clean Air Act, as amended, the Federal government requires each state to develop an implementation plan to provide for implementation, maintenance,

and enforcement of the National Ambient Air Quality Standards (NAAQS) in all parts of the state. If the plan is deemed unsatisfactory, the Federal government can design and implement a Federal Implementation Plan which supplants the SIP.

Threshold Limit Value (TLV).

The American Conference of Governmental and Industrial Hygienists (ACGIH) has reviewed several hundred existing chemicals in order to provide industrial hygienists with an evaluation of health hazards they may pose in the workplace. The TLV, established by ACGIH, is the limit to which nearly all workers may be repeatedly exposed day after day without adverse effect. The airborne concentration is expressed as TLV/TWA or TLV/STEL (Short-Term Exposure Limit).

TSCA (Toxic Substances Control Act). Enacted in 1976, TSCA gives US Environmental Protection Agency (EPA) the ability to track the 75,000 industrial chemicals currently produced or imported into the United States. EPA is supposed to screen these chemicals and can require reporting or testing of those that may pose an environmental or health hazard. Under TSCA, EPA can ban the manufacture and import of chemicals that pose an unreasonable risk.

Volatile Organic Compounds (VOCs). EPA has established a general definition of a VOC that is very broad. In effect, it states that "any compound of carbon" is classified as a

VOC for regulatory purposes, unless it appears on a list of compounds that have been specifically exempted [40 CFR §51.100(s)]. With certain important exceptions, most solvents used in coatings, inks, adhesives, and consumer products are classified as VOCs.

VOC-Exempt Compounds.

There are a small number of organic compounds that do not contribute to ozone formation and are therefore classified as "VOC-exempt." Although only a few solvents are currently classified as VOC-exempt, they can be an important tool for meeting VOC-content limits while still allowing the use of proven solvent systems. The list of compounds that EPA has classified as VOC-exempt is found at 40 CFR §51.100(s)(1).

Solvents Council

The Solvents Council serves as a forum for addressing health, safety, and environmental issues that affect producers, distributors, and users of hydrocarbon and oxygenated organic solvents. For more information about this bulletin or the Solvents Council, please contact Barbara O. Francis, Manager of the Solvents Council at Barbara.Francis@americanchemistry.com.

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