

This Glossary includes terms used in *Lungs at Work* as well as other terms commonly associated with IAQ management and remediation. Use it to improve Green Team communications with facility managers and IAQ experts.

Sources: U.S. EPA *Building Air Quality – A Guide for Building Owners and Facility Managers* and various online sources.

**ACGIH** – American Conference of Governmental Industrial Hygienists.

**ASHRAE** – American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

**ASTM** – American Society for Testing and Materials, a safety and performance certification agency.

**Air Cleaning** – An IAQ control strategy to remove various airborne particulates and/or gases from the air. The three types of air cleaning most commonly used are particulate filtration, electrostatic precipitation, and gas sorption.

**Air Exchange Rate** – Used in two ways: 1) the number of times that the outdoor air replaces the volume of air in a building per unit time, typically expressed as air changes per hour; 2) the number of times that the ventilation system replaces the air in a room or area within the building.

**Air Intake** – Source points where fresh air is introduced into a building's HVAC system.

**Antimicrobial** – Agent that kills microbial growth. See "disinfectant," "sanitizer", and "sterilizer."

**Biological Contaminants** – Agents derived from or that are living organisms (for example, viruses, bacteria, fungi, and mammal and bird antigens) that can be inhaled and can cause many types of health effects including allergic reactions, respiratory disorders, hypersensitivity diseases, and infectious diseases. Also referred to as "microbiologicals" or "microbials."

**Breathing Zone** – Area of a room in which occupants breathe as they stand, sit, walk or lie down.

**Building Envelope** – Elements of the building, including all external building materials, windows, and walls, which enclose the internal space.

**Building-Related Illness** – Diagnosable illness whose symptoms can be identified and whose cause can be directly attributed to airborne building pollutants; for example, Legionnaire's disease, hypersensitivity pneumonitis.

**CFM** – Cubic feet per minute; a measurement of airflow that indicates how many cubic feet of air pass by a stationary point in one minute. The higher the number, the more air is being forced through the system.

**CO** – Carbon monoxide. An odorless, colorless, tasteless and toxic gas, produced by incomplete oxidation of carbon during combustion.

**CO<sub>2</sub>** – Carbon dioxide. An odorless, colorless gas produced by human and animal respiration and burning of fossil fuels.

**Ceiling Plenum** – Space above a suspended ceiling that accommodates the mechanical and electrical equipment and that is used as part of the air distribution system. The space is kept under negative pressure.

**Commissioning** – Start-up of a building that includes testing and adjusting HVAC, electrical, plumbing, and other systems to assure proper functioning and adherence to design criteria. Commissioning also includes the instruction of building representatives in the use of the building systems. These processes are key criteria for certification of green buildings under the U. S. Green Building Council's LEED rating system.

**Conditioned Air** – Air that has been heated, cooled, humidified, or dehumidified to maintain an interior space within the "comfort zone," sometimes referred to as "tempered" air.

**Constant Air Volume Systems** – Air handling system that provides a constant airflow while varying the temperature to meet heating and cooling needs.

**Dampers** – Controls that vary airflow through an air outlet, inlet, or duct. A damper position may be immovable, manually adjustable, or part of an automated control system.

**Diffusers and Grilles** – Components of a ventilation system that distribute and diffuse air to promote air circulation in the occupied space. Diffusers supply air and grilles return air.

**Disinfectants** – One of three groups of antimicrobials registered by the U.S. EPA for public health uses. EPA considers an antimicrobial to be a disinfectant when it destroys or irreversibly inactivates infectious or other undesirable organisms, but not necessarily their spores. EPA registers three types of disinfectant products based upon submitted efficacy data: limited, general or broad spectrum, and hospital disinfectant.

**EPA** – United States Environmental Protection Agency, the government agency responsible since 1970 for safeguarding human health and the health of the natural environment – air, water, land – upon which life depends.

**ETS** – Environmental tobacco smoke.

**Environmental Agents** – Conditions other than indoor air contaminants that cause stress, comfort, and/or health problems; for example, humidity extremes, drafts, lack of air circulation, noise, and overcrowding.

**Ergonomics** – Applied science that investigates the impact of people's physical environment on their health and comfort; for example, determining the proper chair height for computer operators.

**Exhaust Ventilation** – Mechanical removal of air from a portion of a building; for example, a piece of equipment, room, or general area.

**Gas Sorption** – Devices used to reduce levels of airborne gaseous compounds by passing the air through materials that extract the gases. The performance of solid sorbets is dependent on the airflow rate, concentration of the pollutants, presence of other gases or vapors, and other factors.

**HEPA** – High efficiency particulate arrestance, a designation applied to air filters.

**HVAC** – Heating, ventilation, and air conditioning system.

**Hypersensitivity Diseases** – Diseases characterized by allergic responses to animal antigens. The hypersensitivity diseases most clearly associated with indoor air quality are asthma, rhinitis, and hypersensitivity pneumonitis. Hypersensitivity pneumonitis is a rare but serious disease that involves progressive lung damage as long as there is exposure to the causative agent.

**IAQ** – Indoor air quality.

**IPM** – Integrated pest management, processes offering alternatives to pest control using toxic chemical pesticides.

**Indicator Compounds** – Chemical compounds, such as carbon dioxide, whose presence at certain concentrations may be used to estimate certain building conditions; for example, airflow or presence of pollutant sources.

**LEED®** – A voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Developed by USGBC, LEED (Leadership in Energy and Environmental Design) is currently being applied to projects in new commercial construction (**LEED-NC**), and the renovation of commercial interiors (**LEED-CI**) and existing commercial buildings (**LEED-EB**); LEED standards for homes (**LEED-H**), core-and-shell development (**LEED-CS**) and the sustainable development of entire neighborhoods (**LEED-ND**) are in pilot stages as of 2007. LEED is a registered trademark of USGBC.

**Legionnaire's Disease** – A bacterial infection much like pneumonia, spread by contaminated airborne mist, which was first identified when many people became ill while attending an American Legion Convention.

**MSDS** – Material safety data sheet. OSHA-mandated document prepared by a product supplier or manufacturer, clearly stating hazardous nature, ingredients, precautions to follow, health effects and safe handling/storage information.

**Make-up Air** – Air brought into a building from the outdoors through the ventilation system that has not been previously circulated through the system.

**Microbiologicals** – See “Biological Contaminants.”

**Multiple Chemical Sensitivity** – A condition in which a person is considered to be sensitive to a number of chemicals at very low concentrations. There are a number of views about the existence, potential causes, and possible remedial actions regarding this phenomenon.

**NIOSH** – National Institute for Occupational Safety and Health, a part of the federal Centers for Disease Control.

**NTIS** – National Technical Information Service. This U.S. Department of Commerce Web site, [www.ntis.gov](http://www.ntis.gov), is a central resource for government-funded scientific, technical, engineering and business related information.

**Negative Pressure** – Condition that exists when less air is supplied to a space than is exhausted from the space, so the air pressure within that space is less than that in surrounding areas.

**OSHA** – Occupational Safety and Health Administration. A Federal agency under the Department of Labor, which publishes and enforces safety and health regulations for most businesses and industries in the United States.

**Ozone** – A nearly colorless, gaseous form of oxygen with a characteristic odor like chlorine. Its formula is O<sub>3</sub>. Ozone in the stratosphere shields the earth from ultraviolet radiation; ozone concentrated in the lower atmosphere is a pollutant.

**PEL** – Permissible Exposure Limit is a legal limit in the United States, set by OSHA, for personal exposure to a substance, usually expressed in parts per million (ppm), or sometimes in milligrams per cubic meter (mg/m<sup>3</sup>). Exposure is defined as a time-weighted average (TWA). This means that, for limited periods, a worker may be exposed to concentrations that are higher than the PEL, so long as the average concentration over eight hours remains lower.

**Particulate Matter (PM)** – Fine particles of a solid (like smoke, dust and pollen) or a liquid (aerosol) suspended in a gas such as oxygen. Particulates range in size from less than 10 nanometers to more than 100 micrometers in diameter. PM that are inhaled can cause respiratory health problems.

**Plenum** – Air compartment connected to a duct or ducts.

**Positive Pressure** – Condition that exists when more air is supplied to a space than is exhausted, so the air pressure within that space is greater than that in surrounding areas.

**Psychosocial Factors** – Psychological, organizational, and personal stressors that could produce symptoms similar to poor indoor air quality.

**RELs** – Recommended exposure limits. Limits on levels of worker exposure to toxic substances, based on human and animal studies and recommended by NIOSH; usually more conservative than TLVs.

**Radiant Heat Transfer** – Occurs when there is a large difference between the temperatures of two surfaces that are exposed to each other, but are not touching; for example, the sun heating the earth or surfaces in an office heated by direct sunlight. Coatings on windows and proper insulation can moderate this transfer, facilitating efficient control of indoor environmental quality.

**Re-entrainment** – Situation that occurs when the air being exhausted from a building is immediately brought back into the system through the air intake and other openings in the building envelope.

**Sanitizer** – One of three groups of antimicrobials registered by EPA for public health uses. EPA considers an antimicrobial to be a sanitizer when it reduces but does not necessarily eliminate all the microorganisms on a treated surface. To be a registered sanitizer, the test results for a product must show a reduction of at least 99.9% in the number of each test microorganism over the parallel control.

**Short-circuiting** – Situation that occurs when supply air flows to exhaust registers before entering the breathing zone. To avoid short-circuiting, the supply air must be delivered at a temperature and velocity that results in mixing throughout the space.

**Sick Building Syndrome** – Term sometimes used to describe situations in which building occupants experience acute health and/or comfort effects that appear to be linked to time spent in a particular building, but where no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be spread throughout the building.

**Soil Gases** – Gases that enter a building from the surrounding ground; for example, radon, volatile organics, pesticides.

**Stack Effect** – Pressure-driven airflow produced by convection as heated air rises, creating a positive pressure area at the top of a building and a negative pressure area at the bottom of a building. The stack effect can overpower a mechanical system and disrupt ventilation and circulation in a building.

**Static Pressure** – Condition that exists when an equal amount of air is supplied to and exhausted from a space. At static pressure, equilibrium has been reached.

**Sterilizer** – One of three groups of antimicrobials registered by EPA for public health uses. EPA considers an antimicrobial to be a sterilizer when it destroys or eliminates all forms of bacteria, fungi, viruses, and their spores. Because spores are considered the most difficult form of a microorganism to destroy, EPA considers the term sporicide to be synonymous with “sterilizer.”

**TLVs** – Threshold Limit Values. Annually updated guidelines defined by the industry and governmental members of ACGIH, TLV’s are recommended values, not legal limits. They do not guarantee protection to all workers and are not intended to define community exposure. They are not the fine line between safe and unsafe; rather, TLVs are values that should not be exceeded. The goal is to minimize workers’ exposure to hazardous concentrations as much as possible.

**TVOCs** – Total volatile organic compounds, a measure representing the sum of all VOCs present in the air to provide an approximate indication of pollutant levels. Indoor air typically contains hundreds of different VOCs in very low concentrations, some of which can have additive effects when present in combinations.

**Toxics** – Poisonous substances. This term applies to natural substances, such as those found in poisonous mushrooms or in a snake’s venom; to poisonous artificial products introduced into the environment due to human activity, such as industrial waste products and pesticides; also to harmful substances located on a property, which may include asbestos, lead, or oil residue.

**Tracer Gases** – Compounds, such as sulfur hexafluoride, which are used to identify suspected pollutant pathways and to quantify ventilation rates. Tracer gases may be detected qualitatively by their odor or quantitatively by air monitoring equipment.

**USGBC** – The U.S. Green Building Council, a non-profit organization working to promote buildings that are environmentally responsible, profitable and healthy places to live and work. USGBC’s national and chapter members represent all fields in the building industry.

**VAV** – Variable air volume system. A mechanical HVAC system capable of serving multiple zones, which conditions the air to a constant temperature, varies outside airflow and controls the temperature maintained in a zone by controlling the amount of heated or cooled air supplied to the zone to ensure thermal comfort.

**VOCs** – See “Volatile Organic Compounds.”

**Ventilation Air** – Defined as the total air, which is a combination of the air brought into a building system from the outdoors and the air that is being recirculated within the building. Sometimes, however, used in reference only to the air brought into the system from the outdoors.

**Volatile Organic Compounds (VOCs)** – Compounds that evaporate from the many housekeeping, maintenance, and building products made with organic chemicals. These compounds are released from products that are being used and that are in storage. In sufficient quantities, VOCs can cause eye, nose, and throat irritations, headaches, dizziness, visual disorders, memory impairment; some are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans. At present, not much is known about what health effects occur at the levels of VOCs typically found in public and commercial buildings.

**WHO** – World Health Organization, an agency of the United Nations founded in 1948 to promote technical cooperation for health among nations, carry out programs to control and eradicate disease, and strive to improve the quality of human life.