



Glossary of Terms Ventilation, Air Purification, Industrial Hygiene

Absorption: diffusion process in which molecules are transferred from the gas phase to a liquid

Administrative controls: methods used to control employee exposure to airborne contaminants, e.g., by job rotation or work re-assignment

Adsorbents: gas scrubbing, porous materials with a very high ratio of interior surface area to external surface area, e.g.:

(a) **activated carbon:** the most common adsorbent material due to inherently high surface area and relatively low cost

(b) **blended media:** mixture of chemically impregnated activated carbon and activated alumina

Adsorption: a physical process in which a gas or vapor adheres to the surface of a solid (usually a highly porous material, e.g., activated carbon)

Aerosols: an aerosol is a suspension of solid or liquid particles in air; typical aerosols:

(a) **Dusts:** dusts are solid aerosols generated from the reduction of larger materials; airborne dust range, 0.1 - 30 μ

(b) **Fumes:** are solid aerosols formed by the condensation of solid materials, e.g., welding fumes, range, 0.001 – 1.0 μ

(c) **Smoke:** aerosol mixture formed from incomplete combustion of organic matter, size range, 0.01 – 1.0

(d) **Vapors:** are gases formed by the evaporation of materials which are normally liquid or solid, size 0.005 μ

(e) **Gas:** materials with the tendency to expand indefinitely and which completely and uniformly fills the container it occupies.

Air purifier: a device to capture and contain industrial process air contaminants

Activated alumina: a highly porous chemisorbent media - usually impregnated with $KMnO_4$

Balancing by dampers: design process for local exhaust systems using adjustable dampers to distribute airflow

Balancing by static pressure: design process for local exhaust systems using selected duct diameters to generate static pressures to provide distributed airflow – without dampers

Brake horsepower: the power needed to spin the fan (neglecting motor/fan drive inefficiencies), 1 HP = 33,000 ft.-lb per min.

Brake horsepower curve: graphical representation of brake HP at different airflow rates for a fan

Branch (or path) of greatest resistance: the path from a hood to the fan (and exhaust stack if used) that causes the greatest pressure loss in duct system

Breathing zone sample: air samples collected in a worker's breathing zone to assess inhalation exposure to airborne contaminants.

CFM: unit of air flow measurement, cu. ft. per minute

Capture envelope: a zone in front of a hood within the bounds of which contaminants will move into the hood

Capture velocity: the air velocity at any point in front of a hood necessary to overcome opposing air currents and to capture the contaminated air at that point by causing it to flow into the hood

Carcinogen: a substance that causes cancer

Chemisorption: a non-reversible chemical process, impregnated activated alumina media attracts gaseous contaminants which are converted to non-toxic solids that remain on the pellets and are permanently removed from the environment

Differential pressure: the difference in static pressure between two locations, e.g., above and below a filter

Duct: a conduit for conveying air at various pressures

Engineering controls: reduction of worker exposure to airborne contaminants by modifying the source or reducing the quantity of contaminants released to the workplace

Fan rating: data describing the volumetric output of a fan at different static pressures

Filter, HEPA: high-efficiency particulate air filter; inherent minimum efficiency of 99.97% in removing DOP smoke particles with a diameter of 0.3 μ

Friction loss: pressure losses in a duct system due to friction

Hoods: strategically positioned devices designed to enclose or capture process contaminants

Hood entry loss: the pressure loss from turbulence and friction as air enters the system

Hood static pressure: suction or static pressure available in the duct behind the hood to draw air into the hood

LGAC's: laser-generated-air-contaminants

Manometer: an instrument for measuring air pressure

Pressure drop: the difference in static pressure measured at two locations due to friction or turbulence

Particulate: airborne material with a relatively fixed shape and volume such as dust, mist, smoke and fume

Plenum: a compartment or chamber enclosing a pollutant source and connected by ductwork to an air cleaner

Relative humidity: the ratio of the amount of water in the air at a specific temperature to the maximum capacity of the air at that temperature

Respirable particulate: materials <10 μ can penetrate to the lungs when inhaled and can be hazardous

Static pressure: the pressure in a duct that tends to burst or collapse the duct; may be positive or negative, usually measured in in.WC

TLV's: TLV-TWA; Threshold limit value-time-weighted average for chemical substance concentrations for an 8-hour workday that workers may be repeatedly exposed to without adverse effects – OSHA-specified limits

VOC's: benzene, formaldehyde & other volatile organic chemicals outgas from industrial processes; high hazard potential