

GLOSSARY

Biohazardous Materials: Infectious agents, the products of infectious agents, or the components of infectious agents presenting a risk of injury or illness.

Biosafety Level: Biosafety levels consist of laboratory practices and techniques, safety equipment, and a laboratory facility appropriate for the operations performed and the hazard posed by the particular biohazard material. The Centers for Disease Control (CDC) and the National Institute of Health (NIH) define the four biosafety levels in the publication, *Biosafety in Microbiological and Biomedical Laboratories*, 1988 and revisions, and recommend biosafety levels for particular pathogenic microorganisms.

Biosafety Cabinet¹: A ventilated cabinet which serves as a primary containment device for operations involving biohazard materials. The three classes of biosafety cabinets are described below:

Class I Biosafety Cabinet: The Class I biosafety cabinet is an open-fronted negative-pressured ventilated cabinet with a minimum inward average face velocity at the work opening of at least 75 feet per minute. The exhaust air from the cabinet is filtered by a HEPA filter and discharged without recirculation.

Class II Biosafety Cabinet: The Class II biosafety cabinet is an open-fronted, ventilated cabinet. Exhaust air is filtered with a high efficiency particulate air filter (HEPA). This cabinet provides HEPA-filtered downward airflow within the workspace. Class II Cabinets are further classified as type A, type B1, type B2 and type B3.

Class II, type A biosafety cabinets may have positive pressure contaminated internal ducts and may exhaust HEPA-filtered air back into the laboratory. Shall provide a minimum inward average face velocity of 75 feet per minute at the work opening.

Class II type B1 cabinets have all biologically contaminated internal ducts or plenums under negative pressure or surrounded by negative pressure ducts or plenums, exhaust HEPA filtered air through external ducts to space outside the laboratory, and have HEPA filtered downflow air composed largely of unrecirculated inflow air.

Class II type B2 cabinets (also know as "total exhaust" cabinets) have all biologically contaminated internal ducts or plenums under negative pressure or surrounded by negative pressure ducts or plenums, exhaust HEPA filtered air through external ducts to space outside the laboratory, and have HEPA filtered downflow air drawn from the laboratory or outside air.

¹ California Code of Regulations (CCR), Title 8, General Industry Safety Orders, Section 5154.2, Ventilation Requirements for Biological Safety Cabinets.

Class II type B3 cabinets (also known as "convertible" cabinets) have all biologically contaminated internal ducts or plenums under negative pressure or surrounded by negative pressure ducts or plenums, exhaust HEPA filtered air through external ducts to space outside the laboratory, and have HEPA filtered downflow air that is a portion of the mixed downflow and inflow air from a common exhaust plenum.

Class III Biosafety Cabinet:: The Class III biosafety cabinet is a totally enclosed, negative pressure, ventilated cabinet of gas-tight construction. Operations within the Class III cabinet are conducted through protective gloves. Supply air is drawn into the cabinet through high-efficiency particulate air filters. Exhaust air is filtered by two high efficiency particulate air filters placed in series or by high efficiency particulate air filtration and incineration, and discharged to the outdoor environment without recirculation.

Boiling Point: The temperature at which the vapor pressure of a liquid equals the surrounding atmospheric pressure. For purposes of defining the boiling point, atmospheric pressure shall be considered to be 14.7 psia (760 mm Hg).

California Fire Code Section 203, 204

Carcinogen: A substance is considered to be a carcinogen if:

- (a) It has been evaluated by the International Agency for Research on Cancer (IARC) Monographs and found to be a carcinogen or potential carcinogen; or
- (b) It is listed as a carcinogen or potential carcinogen in the Sixth Annual Report on Carcinogens published by the National Toxicology Program (NTP) or,
- (c) It is regulated by Fed/OOSHA or Cal/OSHA as a carcinogen

Combustible Liquid: A combustible liquid shall be defined as any liquid that has a closed-cup flash point at or above 100°F (37.8°C).

- (a) Class II Liquid. Any liquid that has a flash point at or above 100°F (37.8°C) and below 140°F (60°C).
- (b) Class IIIA Liquid. Any liquid that has a flash point at or above 140°F (60°C) but below 200°F (93°C).
- (c) Class IIIB Liquid. Any liquid that has a flash point at or above 200°F (93°C).

Compressed Gas:

- (a) A gas or mixture of gases having a pressure exceeding 40 psia at 70°F in a container, or
- (b) A gas or mixture of gases having a pressure exceeding 104 psia in a container at 130°F, regardless of the pressure at 70°F, or

- (c) A liquid or mixture of liquids having a vapor pressure exceeding 40 psia at 100°F as determined by UFC Standard No. 9-5.

Containment: The combination of personal practices, procedures, safety equipment, laboratory design, and engineering features to minimize the exposure of workers to hazardous or potentially hazardous agents.

Control Area: A building or portion of a building within which the exempted amounts of hazardous materials are allowed to be stored, dispensed, used or handled.

Corrosive: A substance that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a substance is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue in 4 hours. This term does not refer to action on inanimate surfaces.

Decontamination: Removal or destruction of infectious agents; removal or neutralization of toxic agents.

Emergency shower: A unit that enables a user to have flushing fluid cascading over the entire body.

Explosive: A substance that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Eyewash: A device used to irrigate and flush the eyes.

Flammable Anesthetic Gas: A compressed gas which is flammable and administered as an anesthetic including cyclopropane, divinyl ether, ethyl chloride, ethyl ether and ethylene.

Flammable Liquid: Any liquid that has a closed-cup flash point below 100°F (37.8°C).

- (a) **Class I Liquid.** Any liquid that has a closed-cup flash point below 100°F (37.8°C) and a Reid vapor pressure not exceeding 40 psia at 100°F (37.8°C).

1. Class IA liquids shall include those liquids that have flash points below 73°F (22.8°C) and boiling points below 100°F (37.8°C).
2. Class IB liquids shall include those liquids that have flash points below 73°F (22.8°C) and boiling points at or above 100°F (37.8°C).
3. Class IC liquids shall include those liquids that have flash points at or above 73°F (22.8°C), but below 100°F (37.8°C).

California Fire Code Section 207

Flash Point: The minimum temperature of a liquid at which sufficient vapor is given off to form an ignitable mixture with air, near the surface of the liquid or within the vessel used.

California Fire Code Section 207

Fume Hood: A device enclosed on three sides, as well as the top and bottom, with an adjustable sash or fixed partial enclosure on the remaining side. They are designed, constructed and maintained so as to draw air inward by means of mechanical ventilation, and so that any operation involving hazardous materials within the enclosure does not require the insertion of any portion of a person's body other than the hands and arms into the work area. (Note: Laboratory fume hoods prevent toxic, flammable, or noxious vapors from entering the laboratory, present a physical barrier from chemical reactions, and serve to contain accidental spills.)

Hazardous Material: A material for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes materials which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes. The term "physical hazard" includes materials for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, cryogenic, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive.

Hazard Warning: Any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning that convey the health and physical hazards of the substance(s) present.

Highly Toxic: A substance is considered to be highly toxic if:

- (a) A substance that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- (b) A substance that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
- (c) A substance that has a median lethal dose (LD50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

HIV/HBV Research Facility: A laboratory producing or using research laboratory scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

Irritant: A substance, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A substance is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for 24 hours

exposure or by other appropriate techniques, it results in an empirical score of 5 or more. A substance is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

NIH: National Institute of Health

Nonflammable Medical Gas: A compressed gas, such as oxygen or nitrous oxide, which is nonflammable and used for therapeutic purposes.

Organic Peroxide: An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Oxidizer: A substance, other than a blasting agent or explosive, that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Pyrophoric: A substance that will ignite spontaneously in air at a temperature of 130⁰ F (54.4⁰ C) or below.

Risk Levels:

1. **LOW RISK:** risk level of agents and/or operations having minimal effect on personnel, other animal or plants under ordinary use. This classification is restricted to all etiologic agents designated as Biosafety Level 1 by the CDC.
2. **MODERATE RISK:** risk level of agents/or operations requiring special conditions for control or containment because of (a) known pathogenicity to personnel, other animals or plants; (b) concentration; or (c) genetic alteration (synergistic effect) with other materials. This classification includes all etiologic agents designated as Class 2 or 3 by the CDC (Biosafety level 2 or 3) and oncogenic viruses specified as moderate risk by the National Cancer Institute (NCI).
3. **HIGH RISK:** risk level of agents and/or operations requiring additional control measures beyond those for moderate risk. This classification includes all etiologic agents designated Class 4 or 5 by the CDC and oncogenic viruses classified as high risk by the NCI.

Sensitizer: A substance that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the substance.

Toxic: A substance is considered to be toxic if:

- (a) A substance that has a median lethal dose (LD50) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- (b) A substance that has a median lethal dose (LD50) of more than 200 milligrams per

kilogram but not more than 1000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

- (c) A substance that has a median lethal dose (LD50) in air of more than 200 parts per million but not more than 2000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

CCR, Title 24, Part 9, Section 221-T

Unstable (reactive): A substance which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions or shocks, pressure or temperature.

Vapor Pressure: The pressure, measured in psia, exerted by a liquid.

California Fire Code Section 223

Water-reactive: A substance that reacts with water to release a gas that is either flammable or presents a health hazard.